Alfalfa and How to Grow it.

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INTRODUCTION

WE HAVE pursued certain ambitions since going into business, certain things which we have worked on long enough to show vital results, and others on which we are beginning to get a really satisfactory start.

We have been ambitious to furnish our customers at all times the dependable new plants. In order to determine these we have tested out, first in small plots and later in fields, every crop which promised to be important, beginning with Alfalfa, including Beardless Barley, Bromus Inermis, Soy Beans, Melilotus, and ending, so far, with extensive tests of various varieties of Melilotus and Vetch. We have demonstrated the use, the proper method of cultivation and of harvesting all of these great crops. Furthermore, with the new crops as well as the old ones, we have tried to treat our customers honestly and conservatively. We have no "Billion dollar grass," which will make fifty tons per acre, nor any new wheat which will yield one hundred bushels if seeded a peck to the acre, nor have we a corn that is likely to make two hundred and fifty bushels per acre. We have corn which will make as high a yield as anybody else's, probably one hundred bushels under fairly good conditions. It was good enough so that Dewey Hanes won the State Championship in the One-Acre Plot Contest last year with Wing's 120 Day Yellow with a yield of 139 bushels and 7 pounds. We have wheat that will yield as high as anybody else's, sometimes forty bushels under favorable conditions. Each of our new crops is rigidly tested out in test plots first, usually two or three years under varying conditions, and then practically always grown on our own fields of from twenty to two hundred acres. On account of these rigid tests, we make practically no mistakes when we recommend any new crop to our customers. In our catalogue we describe all these crops, placing the yields at just what we mean, as with the corn, ninety or one hundred bushels, when we mean exactly what we say.

In our ambition to be foremost with the great field crops we think we have succeeded reasonably well. Most people know that we were the pioneer growers of Alfalfa in the Corn Belt twenty-two years ago. We were the first to push the sale of Alfalfa seed about fifteen years ago. We discovered Beardless Barley about twelve years ago, and up to date it is without a peer as a nurse crop. Our firm was one of the first to push Bromus Inermis, the only one to drop it when the commercial samples all came to have Quack Grass. Again, we will be the first ones in the United States to offer Pedigreed Bromus Inermis which will be absolutely free from Quack Grass. This seed will be offered in 1914.

We realized the value of Soy Beans ten years ago, experimented with them several years, were first to push their sale, and first to offer pedigreed seed grown especially from high-yielding plants, tested the most promising varieties out of all the Government's importations of several hundred, selected just the very best ones adapted to the Corn Belt, and discarded those which were not suitable.

We first pushed Melilotus and Vetch; are testing out these plants on an extensive scale now with very satisfactory results. In the summer of 1914 we expect to have hardy Winter Vetch seed of our own raising, something that will be superior to anything else offered in the United States. In the spring of 1914 we will offer Melilotus Alba seed of our own raising.

We expect to be the first to put Pedigreed Beardless Barley on the market. In 1915 we hope to offer seed grown from one very high-yielding plant, seed which at present promises to out-yield ordinary Beardless Barley five bushels per acre.

We have grown Seed Corn from ear row test plots for about twelve years, and all of our corn is being so handled now. We have a number of acres devoted entirely to this experimental work, determining values of new plants, making probably two hundred tests annually, and working out twenty-five or fifty important questions on which at present neither the farmers nor the Experiment Stations have sufficient data.

Our Garden Seeds are being tested in exactly the same way. Our own varieties are all being grown in test plots, and in this manner we are able to tell promptly whether our stocks are all right or not. In connection with this work we test out hundreds of new varieties, and expect to add only the very best of the new varieties offered. We believe that by the policy which we are following, our customers will come to realize that anything new that is really worth while is being offered by Wing, either in the Field Seed or Garden Seed line; that our goods are absolutely standard, and that they can depend upon a result with them fully as good as we represent, or even better if given unusually favorable conditions, and that nothing in our catalogue is overestimated.

Finally, it has been known for years that we have made a careful study of Soil Fertility; that we could advise our customers definitely as to the proper treatment for worn-out soils, the proper cultural methods, fertilizers, and crops which should be used on these, and thousands of our customers look to us for help in these matters. We pride ourselves upon this point, and are only too glad to offer careful suggestions along this line.

GUARANTEE

While our seeds are selected with the greatest care we do not guarantee them except where it is definitely stated. However, we are perfectly willing that our customers should send our samples for analysis either to the Department of Agriculture at Washington or to your state experiment station, and we will also be glad to have them tested for germination.

PRICES

Prices of many of the grass seeds fluctuate so much in market that we have decided, instead of putting our prices in the catalogue at a high enough level so that we could be sure to maintain it throughout the season, to use the Price List, which is independent of the catalogue, and this will be found enclosed. We will change our prices as market conditions compel us to, thereby giving our customers the benefit of any fall in prices, instead of beginning the season on a high level and maintaining it throughout as some other seedsmen do.

In order to take advantage of our Price Lists, orders should be sent us immediately upon receipt of them. It is probable that many of the grass seeds will fluctuate enough this year so that we will have to change our prices about once a week. We usually change on Saturday.

Some of our competitors guarantee prices for an entire month, and issue only one price list for each month. This would be much easier for us than the way we are now doing, because we could estimate quite closely the amount of seed required for a given month, purchase it in advance at a fair margin, and maintain our prices regardless of market conditions. As a matter of fact, though, we believe our present method is cheaper for our customers than a monthly price list would be. For instance, last March the clover seed market continually declined. We followed the market every day, even when our own price list quoted higher, and if we issued a monthly price list we would not follow the market down as we are doing at present. However, in order to positively determine what our customers wanted, we asked several hundred of them for their opinion. About seven-eights of them requested us to continue as we had been doing.

Another point. On most of our seeds, as you will notice by the price list, we charge extra for bags and ship net weights. New seamless bags cost us about 23½ cents each, and we charge 25 cents. Used seamless bags cost us 19½ to 22 cents, and we usually charge 20 cents, shipping grain in these. Jute sacks are costing us 11 to 12 cents, and we usually charge 10 or 11 cents. Some of our competitors talk about "free sacks weighed in gross for net." If you buy Alfalfa or Clover, for instance, at 20 to 25 cents per pound, and your sack is weighed in gross for net, you are paying 20 to 25 cents for that sack. Seven-eights of the people to whom we wrote asked us to continue shipping net weights and charging for the sacks as we had been doing.

SHIPMENTS

Unless otherwise requested, we make all shipments the day following receipt of order. When requested, we will hold shipments a reasonable time, until customers are ready to have us make shipment.

IMPORTANT SUGGESTIONS

When ordering seeds of us be sure to specify whether you wish shipment made by freight or express. We have the Big Four Railroad and the American Express only.

Be sure also to state your county and railroad, as this facilitates your shipment.

We sell absolutely for cash. We accept checks at their face value, drafts or money orders, but if cash in some form does not accompany your order it is our invariable rule to send C. O. D., or if by freight to attach sight draft to the bill-of-lading, payable upon arrival of the seed and after your inspection. Go to the bank, pay the draft and get the bill-of-lading, give it to the freight agent, and he will deliver the seed to you. This method of shipping whereby we attach sight draft to the bill-of-lading is very safe for our customers themselves, as they do not have to pay the draft until the goods arrive, nor do they have to pay at all unless the goods are satisfactory.

If your seed arrives short weight or damaged, have your agent mark condition and shortage on your expense bill, and send to us immediately. We will either assist you to file claim or do so ourselves, but we cannot do it without this expense bill so marked.

We are glad to answer questions and to help our customers with their farm problems. For years we have been known as legume and soil experts. We can assist you by advising the proper rotation, the best leguminous crops, and the best fertilizers to use, not only for maintaining your soil fertility, but for increasing it. We can also assist you by specifying mixtures of grasses for any part of the country or any soil. We ask our customers to help us, by writing their questions on a separate sheet, when ordering seed and asking advice at the same time. This will save us much time, which in our busy season we will greatly appreciate, and will expedite the answering of your questions.

Up to the time this catalogue goes to press, the Parcel Post rates on seed remain the same, 8 cents per lb. The limit of weight in the first and second zones is 20 lbs.; outside the second zone, the limit of weight is 11 lbs.

Alfalfa or Lucerne

Legumes are the only plants which actually add plant food to the soil; they thus rank of the greatest importance, and permanent agriculture depends vitally upon their use. Some, as mammoth or medium clover, are extremely useful, but only moderately profitable to grow when considered from a monetary standpoint. Alfalfa probably outdistances them all, being a legume which through its great roots brings up soil fertility from great depths in the subsoil, secures moisture for itself from the moist subsoil in time of drought, thus making it the most useful legume that we grow, and in addition it is so valuable either to feed or to sell, that no other crop grown in the Corn Belt excels it as a "money crop."

Finally, Alfalfa is the only crop we know of which will yield you a constant income in the shape of bountiful forage, and which will add to your soil fertility at the same time, this being a remarkable case of "having your cake and eating it." Please see Table 1, Page 35, which demonstrates this fact.

ALFALFA SEEDING—Much needless mystery has been made of the Alfalfa seeding question. So much mystery, in fact, that many farmers are afraid to try it at all. Jones recommends one method and Smith another, and how is the farmer to tell which is right? We began the study of the Alfalfa question twenty-five years ago, and since that time we have carefully watched fields of it in almost every state in the Union. We have corresponded with thousands of successful growers, and with thousands of other growers who were having troubles, and we really believe now that we are able to furnish reliable data as to just what is necessary to do in order to succeed with this plant.

We could almost sum the matter up in four words: Lime, drainage, inoculation and humus. Perhaps we have given these in order of their relative importance. Lime is necessary on soils not naturally of limestone formation or filled with limestone pebbles. The importance of this is impressed upon us more and more each year; in fact, we believe today, that there have been more failures throughout the United States on account of insufficient lime in the soil than from any other cause. In order to make it easier for our customers, so easy that they cannot help succeeding, we give later on full instructions for the use of lime and a list of firms from whom the lime may be purchased.

Then as to drainage; there is no use in planting Alfalfa on any soil where water may ordinarily be found at a depth of less than three feet. The Alfalfa may grow all right until its roots strike this water, but then it will probably die.

Inoculation is not always necessary. That is, plants sometimes succeed well without it. Many times they succeed indifferently well, and gradually get their own inoculation. In many cases they fail entirely without it. We are impressed with the great importance of inoculation. Our own neighbors have seldom used it. Ten or twelve years ago they got the fever, and most farmers planted small fields. Generally these fields did just moderately well. As a rule there were yellow spots, and also as a rule

ALFALFA ON ONE OF OUR FARMS. TWELVE ACRES OF FIRST CUTTING IN THIS FIELD MADE 36 LOADS

the alfalfa plants grew smaller and more delicate than they should have done. Usually though our neighbors left these fields seeded for three or four years, during which time they considerably improved. Then they generally plowed them up and farmed them a few years, and within the past year or so these meadows have been quite generally reseeded. This time no special care was given, nor any different treatment from the first time, usually not much fertilizing or anything else, but those same fields today look twice as good as when they were first seeded, and we can account for it in no other way than by inocculation. We still maintain that soil is the best source of inoculation. If soil is not obtainable, use one of the artificial cultures. This subject is fully discussed later on page 9.

Fertile soil contains enough humus. Impoverished soils may be so deficient that special preparation must be made before Alfalfa can possibly succeed. Stable manure where obtainable is the very best thing for adding the proper humus to the soil; and we would urge its liberal use wherever possible. It might be best to use this a year in advance of sowing Alfalfa, and follow with clean cultivation to overcome what weeds might be sown with the manure, or a good way is to top-dress the Alfalfa during its first winter, using a manure spreader and applying the manure evenly without large chunks that might smother the young plants. On impoverished soils, we would recommend preparation for Alfalfa one or two years in advance, growing such crops as Crimson Clover, Mammoth Clover, Molilotus, Cow Peas, Canada Field Peas, Soja Beans, or Winter Vetch, and preferably turning them under or else pasturing them off, so as to give the soil the greatest benefit possible from them.

Having determined that our soil is sweet, well drained, and sufficiently supplied with humus, the only questions that remain are: The preparation of a good seed bed, sowing at the proper time of year, and the use of good seed. For the seed bed, it is essential that the ground be thoroughly fitted. It must be plowed, unless it is old ground and mellow, such as corn stubble or black ground, which may be thoroughly disced instead of plowing. It is better to firm the subsoil a little, so that only the surface is really loose. This, because if the entire soil is very loose, the seed may be planted too deep, and also because the Alfalfa seems to prefer the surface being a trifle firmed.

Ordinarily it is not wise to plow up blue grass pasture or timothy meadows and sow immediately to Alfalfa. It is better to grow another crop one year in order to kill out the timothy and blue grass. Both these grasses willl crowd the Alfalfa, and simply turning them over does not usually kill all of them unless the ground is farmed one year.

TIME OF SEEDING—On Woodland Farm, for many years, it has been our custom to sow Alfalfa at oat-seeding time, about the first week in April, using Beardless Spring Barley as a nurse crop. The Barley is usually cut for hay the last of June, and after this we sometimes secure a good cutting of Alfalfa hay the first season, although we do not count upon this, and are not disappointed if we do not obtain it. We sow about three to five pecks barley to the acre, on very rich ground not more than one bushel, and eighteen to twenty pounds of Alfalfa seed at the same time, usually using a disc drill, throwing the Alfalfa seed in front of the drill, unless the ground is very loose, in which case we throw the seed farther back to prevent its being covered too deeply, and usually drag with a light drag. The Alfalfa seed should be covered half an inch to an inch. Where you have fertile soil, rich in lime, with plenty of phosphorus and humus, and where it has grown either Alfalfa or Melilotus once before, and with a good seed bed, fifteen pounds is ample; if you have not these conditions, twenty pounds is none too much.

Seeding with a grain drill is the least expensive method. We believe a better one is to sow the barley with a grain drill, using a good broadcast seeder for the Alfalfa (probably the Wheelbarrow Seeder is as good as any) covering with a good weeder or light drag, and if on very light ground following with a light roller. We believe this will insure very even distribution of seed, and on properly fitted ground, a very uniform covering for the seed. Possibly the very best method is the use of the new Alfalfa drills now being offered, which are deservedly coming into general use.

The advantages of early spring seeding are that the rains usually come about the right time for the young Alfalfa, which makes a strong growth throughout the entire season, giving us with the barley enough hay and grain the first year to pay the expenses of planting, and going into winter in the most vigorous shape possible with about ten inches or a foot of stalk standing, enough to hold the snow throughout the winter and induce a fine vigorous growth in the spring. We find beardless barley to be the best nurse crop obtainable. It takes the place of the weeds that would otherwise come, gives us some very excellent feed, and with us does the Alfalfa good and no injury. Oats are not so good, because they shade the ground more, and are more in-

clined to lodge. We find that the barley hay with the small amount of Alfalfa we obtain with it makes a forage second only to the pure Alfalfa itself.

We cut the barley either for hay when it is in the milk or dough stage, or for grain when fully matured. It is generally a little better for the Alfalfa if cut for hay, but the grain ripens about July 12th, and it is rare that the Alfalfa is particularly suffering for cutting by that time.

We tested winter rye sown in spring as a nurse crop for Alfalfa, and it is fairly good, although we prefer the beardless barley. The rye will grow from six to twelve inches tall and then die, forming a mulch for the Alfalfa. On rich soils not more than two or three pecks of rye should be sown per acre when used for this purpose. Sow at ordinary oat seeding time, or later if desired.

Winter wheat sown in the same way would do just as well.

Where no nurse crop is used, it is seldom safe to plant Alfalfa before July 1st, because the weeds will almost certainly choke the young plants, and no amount of mowing will prevent their doing so.

Many of our customers prefer seeding during the summer months; this is an excellent way, frequently succeeding as well as our own, although sometimes failing on account of summer drought preventing the young plants from obtaining sufficient growth to go through their first winter. Many farmers become prejudiced against the early spring seeding, owing to their using oats as a nurse crop, but if they would use beardless spring barley or winter rye, they would doubtless be well pleased with the earlier sowing.

For summer seeding we recommend as a good method having the Alfalfa follow a crop of early potatoes, or it may be possible to plow wheat stubble early enough to secure a stand before winter. An excellent way is to plow the ground early in the spring, harrow it as frequently as the weeds appear, and sow the Alfalfa during July. If the rains come right, such Alfalfa should make excellent growth before winter and be certain to succeed. We really believe that where Beardless Spring Barley may be used as a nurse crop, the early spring seeding is advisable in the states of Ohio, Indiana, Illinois, Michigan, New York, and much of Pennsylvania. The late seeding is certainly preferable in some of the New England States, in Virginia, and the States south of the Ohio River. The reason for the late seeding in these states is that their climate seems to be such that the Alfalfa thrives better when sown late than when sown early, and also in part of these places quack or crab grass and other weeds will give so much trouble that the early seeding is almost sure to fail on account of them. The farther south one goes, the later is it safe to seed Alfalfa. We have many customers in Georgia, Alabama, Mississippi, Louisiana and Texas, who seed as late as November 1st, but their winters are so mild that the Alfalfa never winter-kills, and it comes on the next spring in just as good shape as if it had been sown earlier in the season.

FIRST CROP ALFALFA ON ONE OF OUR FARMS. THOSE WHO ATTENDED THE ALFALFA PICNIC WILL REMEMBER THIS AS THE FIELD BELOW THE FARM ROAD

How to Fertilize and Care for Alfalfa After You Get It

Barnyard manure and phosphorus are always the best fertilizers to use for Alfalfa. Use the manure liberally, and also the phosphorus. The best forms of phosphorus are basic slag, bone meal and raw rock. Of these we advise 200 to 500 lbs. basic slag, 200 to 500 lbs. bone meal, 1000 to 2000 lbs. raw rock phosphate. Do not use the rock phosphate unless you apply it with plenty of manure, or unless you are plowing under a lot of vegetable matter.

Establishing Alfalfa is easy; anyone with decently drained land can do that trick. Where the American farmer falls down is in not knowing how to treat his Alfalfa after he gets it.

We are frequently called into consultation by men who have Alfalfa and are uncertain what to do with it. Many times we find them about to plow up a field of Alfalfa because it is unprofitable, when there is a sufficient stand, and all in the world that the field needs to make it pay splendidly is treatment. Now, what sort of treatment?

Sometimes it needs lime. Alfalfa will be yellow and sickly and discouraged if the soil has not in it enough lime. Ground limestone can be spread on established Alfalfa fields at the rate of about 2 to 4 tons per acre, stirred into the soil in any convenient way, by means of the spring tooth harrow, or the disc, or any sort of tool that will do the work. This may make the difference between a yield of a ton or so to the acre and a yield of three or more tons, if the land needs lime.

We think, after close study in many states, that in nearly all lands east of the Missouri River Alfalfa needs phosphorus. It is a great feeder on this substance. It takes it rapidly out of the soil, and few soils are as rich in phosphorus as they ought to be in any event. Alfalfa meadows ought to be given an annual dressing of phosphorus in some form or other. We do not declare that any one form is under all conditions better than any other. Since all legumes require alkaline soils, we greatly prefer that a fertilizer be used which contains no acidity. Non-acidulated bone meal is good; raw rock phosphate properly handled is good, basic slag, containing as it does, 35 to 50 per cent. lime, is the only fertilizer we have which adds to the soils alkalinity, and in this respect is ideal.

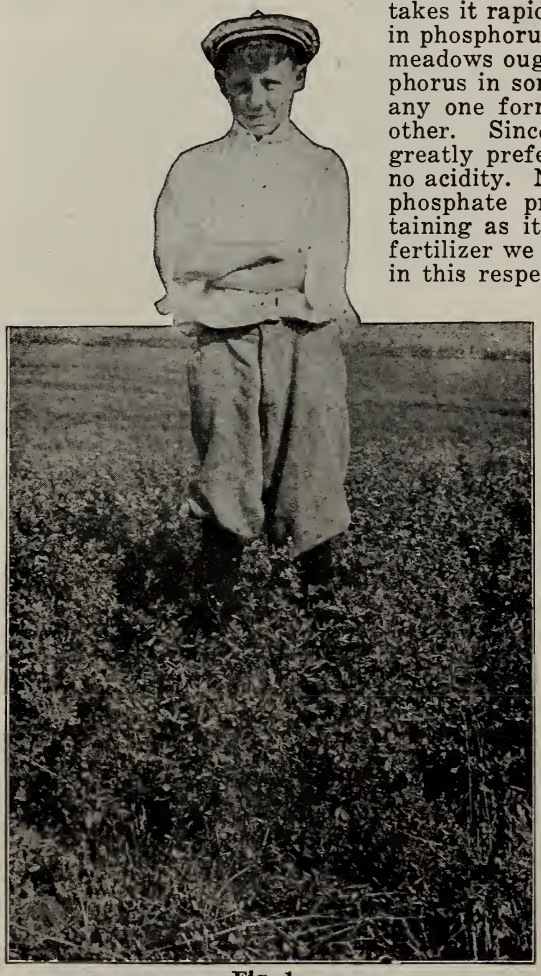


Fig. 1
UNTREATED ALFALFA
(Courtesy of the Breeder's Gazette)

Raw rock phosphate applied before Alfalfa is sown, in connection with manure, has given good results on Woodland Farm. The same substance applied as a top-dressing to Alfalfa already established has given no perceptible results at all, because this stuff needs to come into contact with decaying organic matter.

Basic slag phosphate, having in it both available phosphoric acid and lime, seems the best substance for top-dressing meadows, provided it can be bought at the right price. We present three photographs to show the effect of top-dressing an unproductive Alfalfa field on Woodland Farm in 1912. In June the field was mown, and the crop of hay was seen to be disappointing. Figure 1 illustrates about what it was like at the first cutting. There was a thick stand; it needed only to be fed. As soon as the hay was off, we harrowed it thoroughly with the spring-tooth alfalfa harrow (made by Bucher & Gibbs, Canton, Ohio) and applied basic slag (Key Tree Brand Thomas Phosphate Powder), in strips, using from 500 to 1000 lbs. per acre, leaving strips untreated, and applying acid phosphate at the rate of about 500 lbs. per acre to another strip.

As soon as the fertilizers were applied, the land was again harrowed with the spring-tooth harrow to bury the fertilizer a little way. The effect was marvelous. It can be seen in Figures 2 and 3, which show the third cutting, which made on the fertilized strips 3000 lbs. to the acre of dry hay. In Figure 3 is seen one of the untreated check strips, also beyond it the end of an acid phosphate strip. Please observe that in Figure 3 you are looking across the ends of the strips just as the mower left them at the third cutting in early September.

Making a careful estimate of the cost of this fertilization and its result, we learned that the extra hay secured in 1912 cost us but $2.42 per ton, and the fertilized strips were so much more vigorous than the unfertilized ones, that it is very evident that the yield in 1913 would also be greatly influenced.

To sum up, if you have Alfalfa already established, you ought to do these things:

Take an alfalfa harrow and after the first or second cutting harrow it well to take out the foxtail and other grasses and weeds.

Feed it yearly with phosphorus. If you can get it, take basic slag; if that is unavailable, use bone meal.

If your land is peaty or light and chaffy, add potash to the fertilizer, and your Alfalfa will do well there.

We believe now, that given harrowing, fertilization and drainage, Alfalfa will endure with profit for a good many years on any farm in eastern America, provided that it is not cut too late in the fall and is not covered with an ice sheet in winter.

Do not mow Alfalfa later than the first of September if you can avoid it, unless you desire to plow it up in any event. A big growth to stand on the field over winter makes for fine, strong Alfalfa the following year.

We are so much impressed with Key Tree Brand Thomas Phosphate Powder, both for starting Alfalfa and for top-dressing it, that we have made arrangements with the leading importers of this stuff, and are prepared to supply it in any amounts. We ourselves use 500 lbs. of it to the acre in laying down alfalfa meadows. It is marvelous what a growth it stirs up the first year; we quickly get our money back.

SEED—Good seed is of great importance. We have studied Alfalfa for so many years that we pride ourselves very much upon our ability to choose the very best seed. Alfalfa seed coming from Arizona, South America or Arabia, will grow all right the first year, and then will probably winterkill the first winter, especially in any of the Northern States. We find that the very best seed in the world, that which is freest from dangerous weeds and which possesses the greatest vitality, is produced in our own United States, particularly in the northwestern part. Also it is better if grown on non-irrigated soil. All of our seed comes from these Northwestern states, is non-irrigated, and we cheerfully guarantee it free from Alfalfa's most deadly enemy, the dodder. When you receive seed from us, send sample to your Experiment Station, and if they detect any dodder in it, return the seed immediately, and either get your

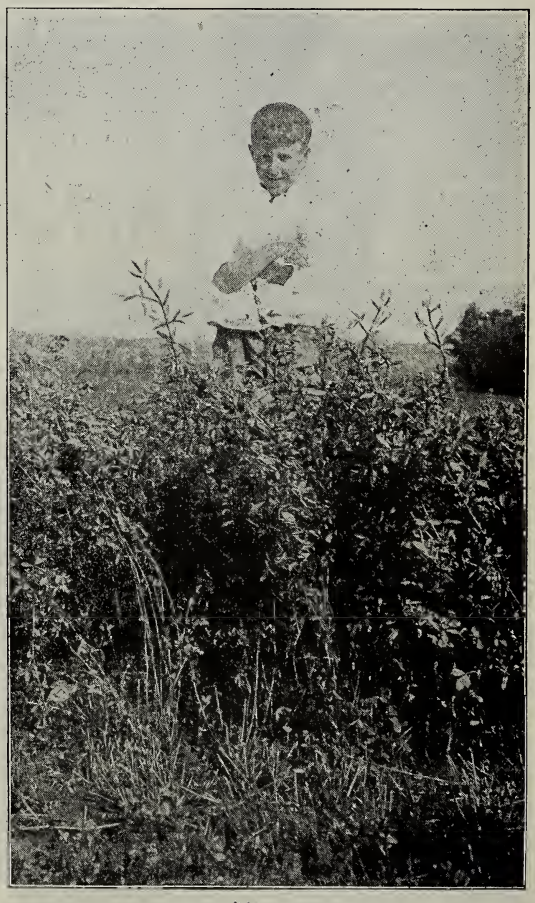


Fig. —
ALFALFA TREATED WITH BASIC SLAG.
(Courtesy of the Breeder's Gazette)

ORDER SHEET

THE WING SEED COMPANY, Mechanicsburg, Champaign Co., Ohio.

*Shall we ship by Mail, Freight or Express?*_____ *Date*_____

*Name*_____

*Post Office*_____

*Box No.*_____ *R. F. D. No.*_____ *P. O. Box*_____

*Street No.*_____ *State*_____

*Shipping point if different from Post Office*_____

Amount Enclosed

Postal Money Order _____

*Express Money Order*_____

*Draft*_____

*Stamps*_____

*Cash*_____

*Total*_____

WE DELIVER FREE IN THE U. S.

To any postoffice, railroad express office or freight station, at our option, all seeds in packages, ounces, one-fourth pounds, pints, pounds or quarts, unless otherwise noted in catalogue

Purchaser pays transit charges on quantities larger than those named above, as well as on FARM SEEDS and IMPLEMENTS.

Bushels	*Qts.*	*Pts.*	*Lbs.*	*Oz.*	*Pkts.*	*NAMES OF ARTICLES WANTED*	*PRICE*		
							$	*Cents*	

Bushels	Qts.	Pts.	Lbs.	Oz.	Pkts.	NAMES OF ARTICLES WANTED	PRICE $	PRICE Cents	
						Amount brought forward			

money back or more seed. If they find any trefoil, you may do the same thing Trefoil is a harmless little clover, but it is added to the Alfalfa as an adulteration, owing to the seed being inexpensive and difficult to distinguish from the Alfalfa seed itself.

We handle only American grown Alfalfa. French grown seed might be all right if it were as free from weeds as our best American, but usually it is not. There is very little difference in price; probably 25 cents per acre would usually cover the difference in cost between the best American seed and the best French seed. One cannot afford to cut very many weeds for 25 cents. Turkestan Alfalfa is being very widely exploited. We carefully tested this variety out on our own farms, and were thoroughly disgusted with it. It made a yield about half as good as the American seed; it was puny, delicate stuff, and we feel that we could not afford to sow it, even if the seed were given to us. Correspondence with most of the Experiment Stations brings out similar experiences with them. The Kansas Experiment Station probably tested it more carefully than any other. Their report on a four-year test gave an average of one thousand pounds per acre less forage from the Turkestan seed than from the American seed. The table below shows the way this would figure out in results for four years.

TABLE 4

Why We Do Not Recommend Turkestan Alfalfa.

Experiment Stations say that it yields less than the good American seed.

Kansas Station found the difference to be 1000 pounds per acre in favor of American seed. Our own tests showed not over half the yield of Turkestan that we received from American seed. Using Kansas figures gives the following results:

Credit American Seed		Dr. Amer. Seed		Credit Turkestan Seed		Dr. Turke'n Seed	
		Cost of seed per A.	$4.00			Cost of seed per A.	$3.33
1st yr. hay at 3 T. per A.	$ 36.00			1st yr. hay at 2½ T. per A.	$30.00		
2d yr. hay at 3¾ T. per A.	45.00			2d yr. hay at 3¼ T. per A.	39.00		
3d yr. hay at 3½ T. per A.	42.00			3d yr. hay at 3 T. per A.	36.00		
4th yr. hay at 3 T. per A.	36.00			4th yr. hay at 2½ T. per A.	30.00		
Total	159.00		4.00	Total	135.00		3.33
		Net	155.00			Net	131.67
						Bal. fav. Am. Seed.	23.33

Some of our customers inquire for Turkestan Alfalfa seed. We give above reliable figures showing why we do not like Turkestan Alfalfa. Several Experiment Stations report similar results, and we believe all of them advise the use of the best American seed in preference to any imported seed.

We feel that we have just cause for being proud of our Alfalfa seed, for each year we will sell to practically all of the Experiment Stations and agricultural colleges in this and adjoining states and to the U. S. Government at Washington, for experimental work. No class of buyers is so particular as this.

Our skill in selecting Alfalfa seed has built up this branch of our business, until today we believe that we retail as much as any other three retailers east of the Missouri River. During the busy season, a carload lasts us from six to twelve days. We secured this business by selling the best seed, and not by extensive advertising.

In some of the far Southern states, an enemy constantly to be fought is the Johnson Grass. In some of these states Alfalfa seed is produced, and is very likely to be mixed with this pest.

We guarantee our seed absolutely free from this Johnson Grass, and growers in any country who are troubled with it, may with perfect confidence purchase our seed.

ALFALFA FOR THE POULTRYMAN—The poultryman will find great profit from having a run of Alfalfa. This should not be too small a space, but large enough so that the poultry can forage at will without injuring the plants, and so that he may cut the hay regularly and save it for winter feeding. Poultry thrive upon a diet composed chiefly of Alfalfa, with some grain in addition.

ALFALFA FOR THE DAIRYMAN—No other food forms so good a basis for the ration of a diary cow as Alfalfa, the reason being its extreme richness in protein, its easy digestibility, and the additional reason that the cows love it so, and eat so greedily, Alfalfa growing countries have a great advantage over other countries in the dairy business, so that it is well for the dairyman, wherever he is situated, to begin to consider how he may make his own soil an Alfalfa-growing soil. It has been found that the cost of milk production can be cut square in two by the use of home-grown Alfalfa. A ton of Alfalfa hay, early cut and nicely cured, is worth as much pound for pound as the best wheat bran for food for the dairy cow. Even ordinary Alfalfa hay is worth nearly as much as wheat bran; so that it is clear to the Eastern dairyman, who must pay $25.00 a ton for wheat bran, a field of Alfalfa yielding no more than three or four tons per acre is a veritable gold mine. Governor Hoard has found that with Alfalfa in the dairy ration, it is necessary to use only about half the amount of grain that must

be fed when other forage is provided. In truth, with Alfalfa hay and corn silage, little or no other food is needed to keep the dairy cow in the most profitable producing condition. We thus emphasize the importance of Alfalfa to the dairyman, because we believe that its use in this great industry will bring about fully as great an increase of profits as will the use of the silo, the pure bred sire, or the milk sheet and the Babcock test, and may be a little more than the other improvements. There was a time, only a few years ago, when it would have seemed not worth while thus to attempt to raise the hope of the dairyman, for then it had not been demonstrated that Alfalfa could be grown away from the "Alfalfa Belt." But since then we have learned the few and simple requirements of the Alfalfa plant, and now we do not hesitate to affirm that we can grow Alfalfa anywhere, upon any farm in the United States, not at too high an altitude if the few simple but essential conditions are complied with.

TIME TO CUT ALFALFA—We usually cut it when about one-fifth of the plants begin to show bloom. A somewhat better way of ascertaining the proper time is to watch for the buds at the base of the plants and cut when they appear above the ground. These buds are the beginning of new stalks, and their appearance indicates that the plant is ready to make another crop.

ALFALFA AS A PASTURE CROP—It is especially adapted to being depasturized by horses and hogs, and perhaps the greatest profit comes from such use. The practical difficulty with depasturizing Alfalfa with sheep and cows is, that being a clover, it sometimes causes bloat, similar to clover bloat. The best preventive of bloat is to have the Alfalfa mixed with grasses in the pasture. When this is done, the animals eating the two together are very much less apt to bloat. The best grass to mix with Alfalfa for pasture is Brome Grass (Bromus Inermis), or Tall Meadow Oat Grass (Avena Elatior).

In pasturing Alfalfa, to get the best results, one should not turn on it before the plants have grown nearly to the blossoming stage; furthermore, the pasture should be so large that the animals will not eat it down closely. It should be mown at least twice during the season and made into hay. It will not do, however, to pasture the field with sheep or cattle immediately after it has been mown, this being the surest known method of inviting disaster. After Alfalfa is mown, it is not safe to turn onto it until the plants have reached the woody stage. Thus treated, Alfalfa pastures will last for years, and afford an astonishing amount of nourishment.

All stock should be taken off of Alfalfa pastures by the first of October, or in the Eastern states, at the beginning of hard frosts; this, both for the good of the Alfalfa and for the good of the animals themselves. It is dangerous to depasturize frozen Alfalfa, and it is not even wise to cut it for hay. A profitable scheme sometimes prac-

Fig. 3
ENDS OF FERTILIZED AND CHECK STRIPS AS DESCRIBED ON PAGE 8

ticed is to break an old blue grass pasture, plow it rather deep, fertilize it well, and seed it down to Alfalfa. A good stand of Alfalfa is almost assured by this method, and while the blue grass comes up immediately and fills in between the Alfalfa plants, within a few years, the amount of combined herbage yielded by this practice is almost incredibly great, the grass itself yielding more than it did before the Alfalfa was sown upon it. Alfalfa thus sown will not last as long as when the grass is absent, but while it is there it is extremely profitable.

In any of the states east of the Missouri, we think that farmers who pasture Alfalfa with cattle and sheep may be reasonably sure to have some losses, no matter how careful they are. We have never succeeded in pasturing it ourselves without some losses, but we believe that it is sometimes more profitable to pasture Alfalfa and lose a few sheep or perhaps a steer, than it is to handle our stock on other feed without this loss.

ALFALFA TURNING YELLOW—This may be caused either by a leaf spot or rust, or it may indicate that conditions are not right with the plant, that it needs lime, drainage or inoculation. Mowing will usually check the rust; the other troubles are fully discussed later on pages 5, 9 and 10.

INOCULATION—All legumes have tiny bacteria that work on their roots, forming "Nodules." These bacteria draw nitrogen from the air, and supply the plants with it, and also add it directly to the soil. Without these bacteria the legumes will soon perish, although most of them seem to find their proper bacteria in almost any soil. Alfalfa is an exception, and it nearly always pays to supply its bacteria artificially. This may be done very inexpensively. Obtain soil from some nearby Alfalfa field, and apply it at the rate of one hundred pounds per acre, sowing it late in the afternoon and harrowing it in immediately before allowing the sun to strike it. This is the best way to inoculate. Soil from around the Sweet Clover or Melilotus roots answers equally well. The Government will furnish inoculation of another sort free; this usually succeeds, but not always. It may be obtained from the Bureau of Plant Industry, Washington, D. C. Another excellent way is to sow a few pounds of Alfalfa with your red clover. After the clover is plowed up, sow to Alfalfa, and you will probably have the field inoculated.

We always refuse to sell soil from our fields, but this year we have secured from a neighbor a few tons of thoroughly inoculated soil, and while it lasts we will furnish this to our customers at the following prices: 100 lbs., $1.00; 500 to 1000 lbs., 80c per cwt; shipped in jute bags without extra charge for containers.

Dr. H. Somerville, Chest Springs, Pa., whose advertisement appears on page 12 of this catalogue, is prepared to furnish inoculated soil, and we advise our customers who want inoculation to write to him.

LIME IN THE SOIL—Lime is one of the master keys to permanent agriculture. We must have nitrogen or else all the plants perish. The only way that we can afford to secure nitrogen is by drawing it from the air through the bacteria on the roots of leguminous plants, and these bacteria simply cannot live in soil that is deficient in lime; hence the absolute necessity of being sure that we have enough lime in all farming soils.

Alfalfa thrives best in soils that are most abundantly supplied with lime. It absolutely fails where lime is deficient. Nothing will take the place of lime, and we believe that there have been more failures throughout the Eastern States owing to this deficiency than from any other cause.

KINDS OF LIME—Ground limestone is now manufactured in many places in the United States, and sold usually, where made, for about $1.25 per ton. The finer it is ground, the more quickly is it available. It should be applied at the rate of two to four tons per acre; although where it is inaccessible, and therefore costly, much lighter applications are used with good results, although not so lasting. Sometimes one may get crushed limestone screenings, much of it as fine as sand. This stuff is used for concrete work, walks and ballast, and often may be bought as low as 50 cents per ton or less. When the ground limestone is not available, and this coarser material is, we advise its use. Put on more of it, and eventually every bit of it will become available. It will last for many years in the soil, giving out its beneficial influence constantly. Many farmers having ledges of limestone upon their land can well afford to grind their own limestone at home; a machine capable of grinding a little more than a ton an hour and taking in stones 11x13 inches in size costs about $600.00. These machines are very durable and the expense of operating them quite light. Various firms manufacture this machinery. To save correspondence, we will mention the Jeffrey Manufacturing Co., of Columbus, Ohio, who make suitable grinders for farm use, and the Pennsylvania Crusher Co., Machesney Building, Pittsburg, Pennsylvania. The Eureka Stone & Ore Crusher Co., Cedar Rapids, Iowa.

OTHER FORMS OF LIME—Very long continued experiments, especially in Pennsylvania, show that caustic lime attacks the humus of the soil, and that at every Experiment Station where used, ground limestone rock or ground oyster shells applied at the rate of about two tons per acre every two or three years have given decidedly better results. The caustic lime at the Pennsylvania Experiment Station ate up $7.00 worth of humus annually when used in just sufficient amounts to correct the acidity. We think that caustic lime should not be applied to any soil.

Agricultural lime, or Hydrated lime, is simply caustic lime that has been ground and has had water added. When it can be obtained at a reasonable price, it is probably safer to use than caustic lime.

AIR-SLAKED LIME—Thoroughly air-slaked lime is really the same thing as ground limestone, and there are places where caustic lime may be obtained cheaply but where freight makes ground limestone prohibitive. These places should use air-slaked lime, but from six months' to a year's time should be given this lime for thoroughly slaking. It should be used at the rate of two tons per acre every two or three years. It is unwise to sow lime and acid phosphate at the same time, as the lime would neutralize the phosphate; this would not apply to untreated phosphate rock or to basic slag.

LIME NOT EVERYWHERE NEEDED—Because of the wide-spread interest in Alfalfa and lime, we get letters asking about the application of lime, from regions where we cannot think lime is needed. Hardly anywhere is it needed in the arid region, in the Dakotas, in Nebraska, perhaps nowhere in alkaline soils; probably not in any place where limestone gravel is mixed through the soil by the glaciers, would additional lime be especially needed. When it is somewhat difficult to get stands of red clover; when "sorrel" comes in the land, and crab grass crowds out the Alfalfa; when the Alfalfa plants have a sickly yellow appearance instead of a dark vigorous green; then one may safely assume that lime is needed; and in the humid regions of the East, wherever Kentucky blue grass and white clover is not the natural carpet of the soil. Alfalfa growers should take heed of the need of more carbonate of lime before sowing their seed.

ALFALFA AND TILE UNDER-DRAINS—The question is often asked: "Will Alfalfa stop tile under-drains?" On Woodland Farm with probably eighteen miles of tile under-drains, only a few hundred yards have given trouble from being stopped with Alfalfa roots. These places where trouble has occurred are where running water flows through the tile continuously from perennial springs. In no instance has the Alfalfa given trouble to ordinary farm drains where the tiles become dry in summer.

A THIN STAND OF ALFALFA—It rarely pays to thicken Alfalfa. The seed will usually come up all right, but it will mostly perish throughout the first season. Discing will make the Alfalfa stool out more and thereby help the stand, but we no longer recommend this on account of there being some danger of fungous diseases attacking the mutilated crown. Melilotus Alba may be sown in a thin stand, and will yield about one cutting, when it will probably die. Alsike or Medium Clover will sometimes catch in a thin stand, but this is only moderately certain. The very best thing to do usually is to plow the thin stand up and reseed it. If plowed early in the spring and plowed deeply, it will not kill nearly all of the old plants, and if immediately reseeded the second time, good results are almost certain.

WEEDS IN ALFALFA—Good soils are frequently stored with weed seeds; yet a thorough cultivation of the ground the year preceding the sowing of Alfalfa will accomplish much. Ordinary weed seeds are pretty well destroyed by the mower running over the ground two or three times the first season. Canada thistles are said to be eradicated by the growing of Alfalfa, and many other serious pests including Convolulus Arvensis, variously styled Bindweed, Wild Morning Glory or Wild Pea Vine.

Kentucky blue grass and other grasses frequently creep into Alfalfa and crowd it. If left alone, they will eventually choke out the Alfalfa. We believe the best thing to prevent this is a spring-tooth harrow with the teeth sharpened into diamond-shaped points not more than one inch wide. Use this harrow immediately after any cutting. It will remove Kentucky blue grass, foxtail, and many weeds, and its continued use will probably keep meadows almost entirely free from weeds, while it will injure hardly any Alfalfa plants. The diamond-shaped points will prevent any undue ridging of the loose earth thrown up. This harrow may be obtained from the Bucher & Gibbs Plow Co., of Canton, Ohio.

There are weeds, however, that will get the better of Alfalfa, and that right speedily. One of the worst is dodder. Not many farmers know dodder when they see it. It is a parasitic vine having an almost leafless yellow stem as large as a small twine string, which runs through the Alfalfa, twining around the stems, sending little

rootlets in to suck the juice of the plant. Dodder begins its life from a seed dropped to the earth when the Alfalfa is sown; but, after having had a brief experience with its roots in the soil, it leaves the earth and roots only in the growing Alfalfa, which it binds together in a death grip, making a dense tangle of yellow vines and slowly dying Alfalfa plants.

Farmers cannot afford to treat dodder as they would any other weed. It is so deadly that it must be stamped out immediately, or it will become a very serious pest, and the methods used to exterminate other weeds will not answer for this one. If there are only occasional small patches to be found, mow the Alfalfa in these patches before the dodder begins to bloom; then, in a few days, scatter straw over the infested areas, and burn it. This may kill the Alfalfa plants, but it will probably kill the dodder also. If your field is badly infested, there is nothing to do but plow it up, and plant it to corn or some cultivated crop for one or two years.

Dodder infests clover just as frequently as it does Alfalfa, and it is just as dangerous in the clover as it is in the Alfalfa. Farmers should take great pains to prevent this pest from becoming established in their land and should send samples of their seed to their Experiment Stations for analysis before seeding.

Our own Alfalfa seed and also our Clover seed are guaranteed free from this pest. If your Experiment Station finds any dodder in our seed, we will gladly take back the seed and return your money.

ALFALFA IN CORN—We cannot recommend seeding Alfalfa in corn at the last cultivation, as many wish to do, because the corn nearly always shades the Alfalfa so much that it will not thrive until after the corn is cut; also the corn takes practically all of the moisture from the soil, causing the Alfalfa to suffer from drought; and it usually happens that we have most of the dry weather between the time of the last cultivation of corn and fall, so that all three of these causes will operate against the Alfalfa. We have seen many splendid successes from this method, and many failures. We think the chances of success by this method to be about equal to the chances of failure.

CLIPPING ALFALFA—Alfalfa sown in April with a nurse crop will need not more than one clipping after the nurse crop is removed. If the summer is cool, and weeds are not threatening too much, it will not need to be clipped at all. Better mow it too little the first year than too much. When you remove the nurse crop, mow it close to the ground, no matter what size the Alfalfa plants are. Then, if you clip the Alfalfa, do so by August 15th. There is not the slightest danger of Alfalfa's smothering itself by making a rank growth late in the summer or fall, and going into winter even knee-high without being clipped. If Alfalfa is sown in July or August, it should never be clipped the first year.

MAKING ALFALFA HAY—Alfalfa hay must be cured in the same manner as Red Clover, with this difference, that as the leaves of Alfalfa when dry are extremely brittle, care must be taken to prevent their loss. This simply necessitates raking the hay when still quite tough, and it should also be shocked before it is bone dry. Alfalfa hay will cure admirably if raked quite green, shocked immediately, and allowed to stand in the shock for several days. If this method is used there will be very little loss from storms, and the hay will be of the finest possible quality. Hay caps may be used, if desired, with excellent results. When the hay is cured in the shock, open up the shocks to the sun and air for an hour or so before putting the hay into the barn. Alfalfa hay will stand more punishment from storms than any other hay that we know of. It will also keep excellently in the stack, although we think it a little more difficult to stack than Timothy hay. It may be put in the stack or mow with a trifle more sap than any other kind of hay.

GRIMM ALFALFA—This is one of the hardiest varieties in the world and thrives in Minnesota, Dakota, Canada, etc., where other stocks are likely to winter-kill. It has a branching root which also makes it adapted to somewhat wetter soils than the ordinary Alfalfa will stand. Very little seed is produced. Our stocks come from a man who gives a written affidavit that it is genuine Grimm. We have very moderate amounts and advise early orders.

HARDY ALFALFA—Next to the Grimm is our Hardy Alfalfa. We have procured very small stocks of a strain that has been grown in South Dakota continuously for twenty-nine years, subjected to extremely cold weather, and in this time it has never winter-killed. We can thoroughly recommend this seed. Our stocks are very small and we advise very early orders.

Inoculated Alfalfa Soil

Especially prepared for inoculating new land for the growing of Alfalfa. 75c per cwt., or $10.00 per ton, f. o. b. cars. Send for free booklet "How to Grow Alfalfa." Dr. H. Somerville, Chest Springs, Cambria County, Pennsylvania.

Corn

Corn has rightfully taken a place as one of the great American crops, and we are glad to see the great interest that is being taken in its production. The care that is used in its culture, the frequent breeding plots used by farmers themselves, and the careful germination preparatory to planting being done by farmers themselves all over the country; this is as it should be. We believe that our own methods have fully kept pace with the times in everything pertaining to the growing of large crops of corn as well as the production and care of the seed. About fifteen years ago we began using the ear row test plots, at that time doing so for the sole purpose of increasing our own yield and with no thought of selling seed. From that time on we have had our breeding plots each year, beginning with one variety and gradually extending until we have included not only all the varieties that we are selling today, but a number of others. From these ear row test plots our corn has gone through multiplying plots into the fields, and throughout we have worked carefully to secure, first, maximum yield consistent with reasonably early maturity, so that we can count upon the corn's being ripe every year, and second, a fixed and desirable type. Science has reduced corn breeding to as accurate a thing as we know of, and both the Experiment Stations and breeders among farmers themselves universally recognize this. When we find in our breeding plots that an individual ear is producing an unusually high yield, we are just as certain that its offspring will also produce highly as we are that daylight will follow darkness. This has been proven so often that it is hardly necessary to discuss it. Those of you who have been breeding corn for a number of years have doubtless been surprised the first year to find in your breeding plots one ear producing 100 or maybe 125 bushels per acre, and beside it another ear apparently as good when selected producing only 45 bushels. You have also doubtless been gratified to find after a number of years' work that the variation in your corn was becoming very much less, that your breeding plots would show perhaps nothing below 85 bushels, and you have known that the reason for this was that you had eliminated the low yielding strains from your corn. On our farms we think we have increased the average yield not less than 20 bushels per acre by breeding alone. Our breeding work has followed closely along the lines of Experiment Station work, and that of the greatest corn breeders in the country. There are two things that we have not permitted in our breeding work: the encouragement of types of corn which were too big and too late for states in the latitude of Ohio, and the placing of symmetry and beauty anywhere nearly on a level with yield per acre. Both in our breeding and selection of stock corn for seed purposes, we constantly reject large ears that give indication of being too late for our locality, and in our breeding work we adhere to yield per acre and maturity, irrespective of whether beauty accompanies it or not, and constant experiments of our own as well as at the great Experiment Stations have fully demonstrated that this is the common sense way to handle the matter. A few of our customers complain that our corn is not as fancy in appearance as they wish; practically never does a customer write in, however, after having grown a crop of our corn and say that he was disappointed in his yield. Naturally we like a beautiful corn as well as anybody, and naturally enough we pick this whenever it is right in other ways, but we must first have the yield and a sufficiently early maturity before we dare to even consider beauty.

DEWEY HANES,
of Arcanum, Ohio
who won the Boys' One-Acre Corn Contest in the State of Ohio in the season of 1912, with Wing's 120-Day Yellow Corn. He obtained a yield of 139 bushels 7 lbs.

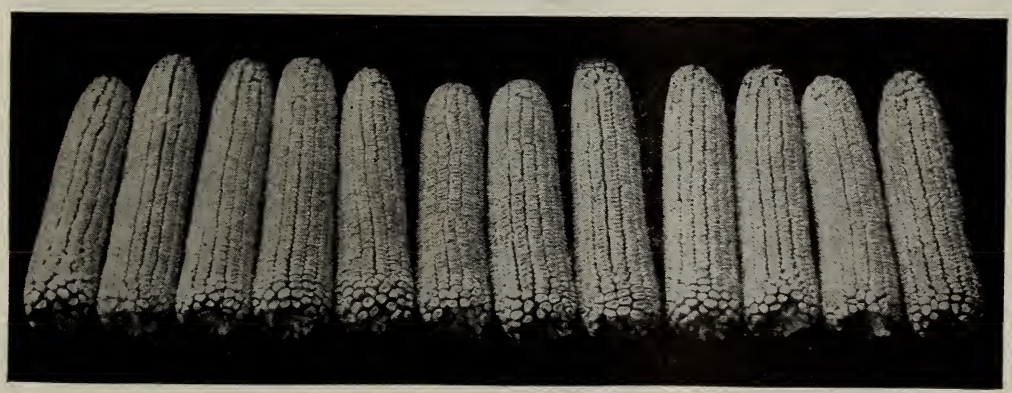
Now, as to our methods of handling Seed Corn. In the first place, we devote

years of time to breeding up a strain or a variety until we get it good enough to offer, then we put it out either on our own farms or adjoining farms in our immediate neighborhood on contract, we furnishing the seed each year and selecting just what we want from the fields. None of our seed is grown more than twenty miles from us; the breeding and selection is all in our own hands. We would grow all of our own seed corn ourselves, but we have not enough land. We select the seed in the fields as early as it is possible to begin husking; it is then hauled immediately to our warehouse, placed in steam-heated rooms and dried. Corn that is dry enough so that we know it will cure out is placed in open, airy crates, and so arranged that the ears touch each other very little. Corn that is not quite so dry is hung on patent wire hangers; either method gives excellent results when a reasonable amount of judgment is used. As soon as it is dry enough, it is carefully inspected again by experts, the butts and tips are shelled off and sold to the elevators along with the irregular shaped grains that are taken off by the grader. About five-sixths of our customers want their corn nubbed and tipped, shelled and graded, and about that proportion of our corn is shelled up ready to go out when the busy season comes on. We usually get this work done before our actual rush comes, because after that time we cannot stop to work much in the corn. This year, in addition to our regular breeding work we had out a large variety plot, growing each of our own varieties as well as a number that we do not sell, side by side under as uniform conditions as could very well be obtained anywhere. The results somewhat surprised us, although this was a "freak year" with corn, and we will be more certian about these results in another year or so when we have a variety of conditions and an average of three or four years for comparison. We will give a part of our conclusions in the descriptions of the varieties themselves.

WING'S IMPROVED WHITE CAP CORN—We have been growing this variety on our farm for fifteen years continuously, and it has received more attention and work from us than the other varieties which we handle, because we were growing this corn and improving it for our own use years before we ever thought of selling the seed. This corn at some time before we secured it, was cross-bred, being a pure white and pure yellow crossed. The result is a variety with the grain mostly white, but showing a tinge of yellow throughout cobs sometimes red and sometimes white. Personally we are partial to a white cap corn, because the white blood contained in it makes it adapted to poor soils, while the yellow makes it early maturing. This variety has been tested beside many other breeds of corn on our farm, and has never been outyielded by any of them. We consider it the safest and surest kind which we have to offer, provided you have one hundred and twenty days in which to mature your corn. We think this to be our best variety either for rich or poor soils, for grain or for ensilage, provided you want an ensilage that matures.

In the variety plot this year, the White Cap had a handicap of a little poorer, colder soil than some others. The yield was 99 bushels and 30 lbs. Maturity one hundred and twenty-five days.

Ears medium to long, cob medium sized, good depth of grain, as deep as it is practical to have it in this climate and yet mature; the greater the depth, the later the corn becomes. Fodder medium, about as large as is advisable in this climate without making the corn too late. This variety will mature satisfactorily in an ordinary season as far north as latitude 41 degrees. It does very well indeed in our own latitude or south of

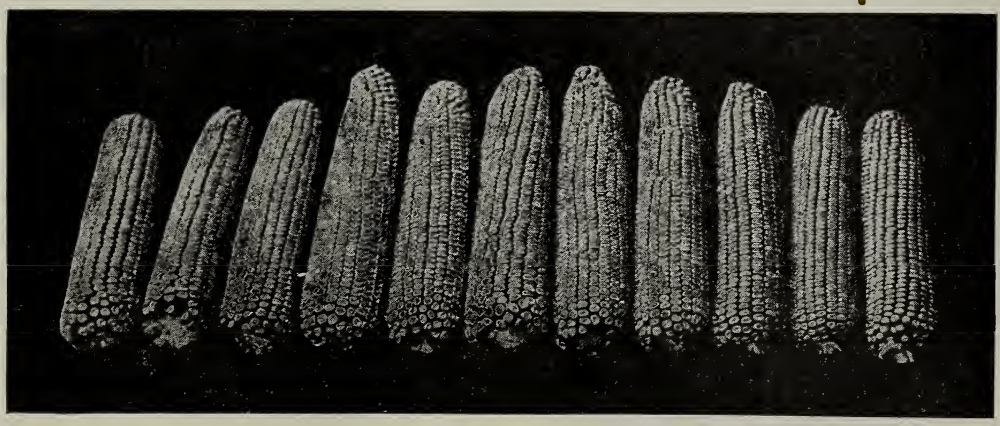


WING'S IMPROVED WHITE CAP CORN
Three acres of this variety has yielded for us one hundred and forty-seven bushels per acre.

us. It succeeds all along Lake Erie in Ohio. In 1908, 50 acres averaged 100.1 bushels; in 1909, 100 acres averaged about 85 bushels; in 1910, 100 acres again averaged about 85 bushels; in 1911, 85 bushels; in 1912 almost 90 bushels; this year, with very severe drought conditions, probably 85 bushels. We find our White Cap Corn to stand punishment of all sorts better than almost any other variety which matures in the same period, and believe that we will secure as great a yield as is obtainable with any other variety, either on rich or poor soil.

WING'S 100-DAY WHITE CORN—This is a white corn which matures here in about 115 days. It is characterized by medium to small sized fodder, smaller than White Cap, about the same as the Clarage, medium sized ears of great weight, and very solid. It is an excellent yielder. As stated, its ears are all medium sized, but it is a well-known fact that a large eared corn is not necessarily a heavy yielder, and we can recommend this corn as being as heavy a yielder as any one hundred and ten day corn which is grown in this state. It has shown itself each year to be a splendid keeper, little damaged by wet weather, and it stands drought, poor soil, etc., excellently. In variety plots this year the yield was 89 bushels 36 lbs. Maturity about one hundred and ten days. We have sent this corn into all parts of Ohio with good results. It will do well anywhere in the latitude of Ohio, and may be safely carried as far north as latitude 42 degrees.

REID'S YELLOW DENT—Reid's Yellow Dent has for years been one of the heaviest yielding varieties of corn in the United States, and also a variety yielding a large

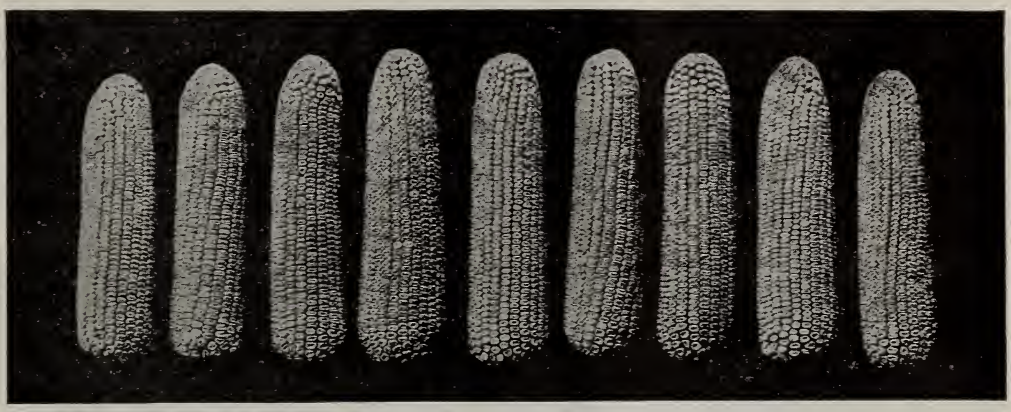


REID'S YELLOW DENT
On good ground there should be no difficulty whatever in securing a yield of 100 bushels or over of this corn.

proportion of seed ears. Its disadvantages for our own section have been that it was a trifle too late, also some strains of this corn were quite shallow grained. We are breeding a strain of it, decidedly the earliest that we have ever found, and also one whose grain suits us the best of any we have ever had.

For standing punishment we put this corn beside Wing's Improved White Cap. The fodder is medium sized, the ears not too high on the stalk. The corn gets sound and fully matured for us each year, ripening in about the same time as our other one hundred and twenty day varieties. We believe this corn will yield very close to any other variety that we have. The variety plot this year gave us little data, because this particular variety was subjected to more severe conditions than any other sort. It matured in one hundred and twenty days. It can be grown as far north as 41 degrees.

FUNK'S YELLOW DENT—This variety does not differ radically from the Reid's Yellow Dent which we are offering this year. We consider the chief difference to be in a little longer ear, that is, the ear is a trifle more slender than the Reid's, and grain is a trifle better shaped. In yield, time of maturity, and general characteristics there is little choice between these two varieties, and both of them are splendid, high-yielding sorts. The strain of Funk's Yellow Dent which we are handling came direct from Funk Bros., Bloomington, Ill., four years ago, and has been carefully selected and kept pure. In variety plot this year, this variety made 92 bushels 8 lbs. Matured in one hundred and fifteen days. This corn may be safely moved to latitude 41 degrees.



FUNK'S YELLOW DENT

There should be no difficulty whatever in obtaining on good ground a yield of 100 bushels or over of this corn.

WING'S 120-DAY YELLOW—This is our most popular yellow corn, and we consider it one of our best varieties. Placed side by side on rich ground, our Improved White Cap and all of our yellow varieties yield, we believe, practically the same, the preference being slightly in favor of the White Cap. On poor soils, our opinion is that White Cap, Clarage, and Reid's Yellow Dent might lead the list, but Wing's 120-Day Yellow excels in being adaptable to many different soils and latitudes, maturing early, and having splendid quality at all times. This corn usually matures in one hundred and ten days. Type of grain is splendid, deep enough and of excellent proportions; the proportion of corn to cob is excellent. Fodder medium sized, a trifle smaller than White Cap. In variety plot this year we secured 101 bushels 15 lbs. Matured in one hundred and five days. We believe that it can safely be moved to latitude 42 degrees.

120-DAY YELLOW

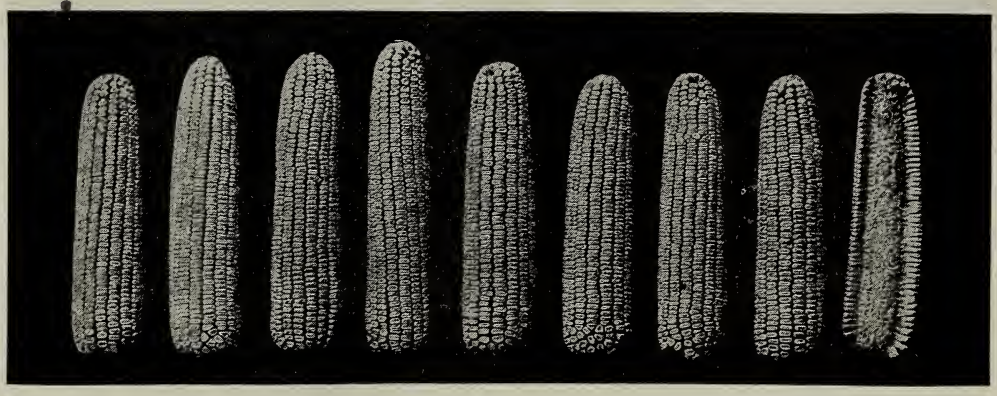
One of our customers in New York State grew one hundred and twenty bushels per acre. Some of our own fields are yielding one hundred and twenty-five, but we feel that this yield can be surpassed in Ohio if the corn be given proper advantages.

WING'S 115-DAY YELLOW—This variety we recommend to people who desire great depth of grain. In this particular we know of no breed of corn that excels Wing's 115-Day Yellow, and as a feeding corn, a heavy yielder that shows a large percentage of grain to cob, we will put this beside anything in the state. We bought the original stock several years ago as a ninety-day corn, but this corn needs about one hundred and fifteen days to mature. The fodder is medium sized, the ears medium and heavy. In variety plot this corn made us 101 bushels. Matured in one hundred and five days. It can be safely moved to 42½ degrees.

CLARAGE—The longer we grow this variety, the better pleased we are with it. On rich ground it yields as heavily as the best of them, and on poor ground we put it beside Wing's Improved White Cap. Its ears are usually medium sized, but this has no effect upon its yield. Its fodder is medium sized, possibly the most valuable fodder for feeding of any variety we sell. It ordinarily matures in one hundred and ten days. It is a very heavy solid corn with splendid quality of grain, the kind of corn that shows a large proportion of seed ears. In variety plot this corn gave us a real surprise. It produced 109 bushels 36 lbs. Matured in about one hundred and three days. It is more than evident that our good opinion of this variety is justified. Will mature as far north as 42 or 42½ degrees.

CLARAGE
This corn at present is yielding right alongside of all of our other yellow breeds.

WING'S 110-DAY YELLOW—This variety is a twin with Wing's 115 Day Yellow. Very deep grained, although not quite as deep as the former. It will mature in about one hundred and fifteen days. Medium sized cob, somewhat larger than Wing's 115-Day Yellow, and medium sized fodder. This is a splendid, heavy yielding sort, and a good feeding variety. It is a variety which we originated ourselves, and judging from the way farmers like it, it seems likely to prove a leader before very long. In variety plot this corn made 102 bushels 41 lbs. Matured in one hundred and five days. We believe that it can safely be moved to latitude 42 degrees.



WING'S 110-DAY YELLOW

MINNESOTA No. 13—This variety has a splendid reputation in the Northwest; was originated by the Minnesota Experiment Station, from whose stocks ours are directly descended. The ears are of moderate size, fodder is also medium in size. The quality is excellent, and the yield with us is also good, 96 bushels 21 lbs. in variety plot. To our surprise, however, this corn this season was not as early as our Clarage; it matured in one hundred and ten days. As this is its first year with us, it was possibly not as well acclimated as it should be, and doubtless next year it will be considerably earlier.

Soy Beans

If you will carefully study the statistics in our table of analyses, page 42, you will see why this crop deserves to take such prominence. It will then be seen that the beans have a higher protein content than oil meal, that the hay from them has a higher protein content than Alfalfa. Note also the splendid amount of fat in the grain. Add to this the fact that with the new varieties it is easily possible to secure two to three or occasionally as high as four or five tons of dry hay per acre; that from twenty to thirty bushels of seed per acre are frequently reported; that the plant is a legume and

TESTING SOY BEAN TEST PLOTS. WING SEED CO'S TRIAL GROUNDS

adds fertility to the soil fully as rapidly as the clovers or other legumes; that it will grow on soil too poor or acid for the easy success of Alfalfa; and you have a splendid combination, certainly qualities that are hard to excel with any of our cultivated crops.

We know of no plant having a wider or more useful range of possibilities than the Soy Bean. When one stops to think of the great feeding value of the grain, of the entire plant's being very valuable for forage, of its being a legume and a heavy gatherer of nitrogen to the soil, and that it is by no means difficult to grow nor exacting as to the kind of soil it requires, he is bound to realize that it occupies a position unique among all our crops. Not only is the grain as nourishing as oil meal, but it is as greedily eaten as corn, and as easily digested as any grain we have ever fed. Moreover, there seems to be a tonic effect about the entire plant, and stock fed either the grain or the forage become full of life and energy as with no other grain that we have ever used. As a hay plant it certainly deserves to compare very favorably with anything that we are now growing, especially so when the best of the new varieties are used. These are not only large enough to produce a great quantity of feed, but the stems are fine enough so that there would be less waste than with most of the old varieties. Also the habit of the new varieties is much superior to that of most of the old ones, the plants standing erect and being easily cultivated and easily harvested.

In habit the Soy Bean is very far superior to the cow pea, the latter being recumbent and difficult to cultivate and to harvest. As a nitrogen-gatherer we are sure the Soy Bean has no superior, when inoculated and where a crop to plow under is desired, nothing is better to add humus to the soil. In this connection please note our statistics in Tables 1, 2 and 3, on pages 35 and 36.

Its possibilities for silage have not been fully demonstrated, but it has been thoroughly tested in connection with corn, and in this way it makes as highly satisfactory a product as any that we know of, the beans greatly assisting to make a balanced ration. When all these facts are considered, and also that it will grow on either fertile or impoverished soils, either limestone or freestone, that while it is not quite a "lazy man's crop," it is not particularly difficult to handle, its high value will be fully realized.

Many times a meadow winter-kills, and we need a catch crop to supply additional hay. Millet has been largely used in the past for this purpose, but Soy Beans mature so quickly that they may be sown at the same time that you would sow millet, and the hay secured from them is so very much more valuable than millet hay, that there is no comparison between them. One hundred pounds of Soy Bean hay contain twice as much protein as the same quantity of millet hay.

SOY BEAN, WING'S MIKADO

Today we are as certain of the value of the crop as we ever were, and having grown them on from one hundred to one hundred and seventy-five acres during the past two years, we can state authoritatively their advantages as well as their weaknesses.

We find the plant to be just as valuable as we thought it was. Our experience also decidedly confirms what we have been telling our customers for some years: that there is a wide variation between different varieties of the beans, that some are much better adapted to different purposes than others, and that some are much better adapted to certain soils than others. Under our variety descriptions we fully state the characteristics of each variety which we are selling. We think it entirely possible that different varieties will thrive better in different parts of the country. One reason why we think this is that for several years we conducted experiments with different varieties which we secured ourselves from various parts of the country and also with some secured from the Government at Washington. Repeatedly, varieties which were particularly good in the Government tests, were unsatisfactory with us. Occasionally a variety which the Government thought was moderately good has proven to be very valuable with us. Some varieties seem to be real general purpose sorts, that thrive on a diversity of soils, giving satisfaction, to our knowledge, in various states. Our experience when growing the beans for grain is that poor ground is all right, that they will make a large yield of grain, although not always much forage. When grown for forage, we would select certain varieties, described later, and preferably put them on fairly good ground; in fact, the richer the ground, the more forage will be obtained. Certain varieties seem to make splendid yields on poor soils, while other varieties do not stand poor soil well.

As a forage crop we believe the soy bean will become decidedly popular, especially where clover meadows for any reason have failed, and a substitute for them is needed. The yield of hay from the soy bean should be nearly or quite equal to that of clover, and the chemical analysis shows the bean to be fully equal to the clover. The only disadvantage with the bean is that it is more difficult to cure than clover, and you can-

not expect a second crop, as we do with clover. This second crop, however, can easily be supplied by mixing winter vetch with the soy beans when planting, as described in a later paragraph.

The photographs of Wing's Sable, Jet, Peking and Wilson, as shown in this catalogue, were taken primarily to show the character of these beans as a forage crop, and not as a grain crop. Note the fineness of the stems, the leafiness, and the erect habit of the plants, which makes them easily grown and harvested.

ITO SAN
FULLY RIPE AND READY TO HARVEST

What will surprise the grower of soy beans as much as anything is the splendid value of the hulls and stalks after the grain has been threshed. Last year we fed a quantity of these hulls to the cows and sheep, giving at least one feed a day of the hulls and one feed of good clover hay. Both the cows and sheep preferred the hulls to the clover hay, and ate them and the stalks, dry and woody as they seemed, fully as well as the clover, with as little waste. We were surprised ourselves at this, because the plants shed their leaves before ripening, and the threshed straw and pods do not look particularly palatable. After feeding in connection with hay for a few weeks, we allowed the cows to run to a stack of the bean straw, and our man noted an increase in the milk as soon as they made this change.

We find them satisfactory as a silage crop excepting that a good deal of corn should be used in connection with them, probably three times as much corn as beans. We expect a yield of about ten tons per acre when cut for silage.

As to their weaknesses, some partial failures have shown us that there are two or three things that they cannot stand. Cold, dry weather at time of planting, when the soil was like dust, until blooming time, ruined part of one field; planting too deep, about two or two and one-half inches, ruined part of a field, and part of a field was poor, owing to the fact that when fitting the ground was so dry and hard that we could pulverize the surface for only about one inch. Right beside this, on ground fitted after a shower, the soys did fully twice as well.

SOY BEAN, WING'S MIKADO

One year, Soys following Soys did very poorly. Other times the results were just as good or better the second year than the first. Our unsatisfactory experience in this one season, however, leads us to discourage the growth of the crop on the same ground for two successive years. We do not know the reason for this result.

TIME OF PLANTING AND CULTIVATION—Soy Beans are not a lazy man's crop. Possibly, they require as much skill and patience as the potato crop. If our

SOY BEAN, WING'S SABLE

instructions are carried out, however, there is little need of even partial failure. Plow your land early in the spring, if possible, selecting soil that is not too foul with weeds. Prepare as for corn, giving frequent harrowings to kill the weeds as they appear. The ground should be a little warmer than for corn, and, therefore, we wait until immediately after corn planting time before seeding the beans, say about May 20th, although most of our varieties will mature seed in ordinary seasons if planted any time before June 20th.

We advise planting in drills about thirty inches apart, and one plant every two or three inches in the drill, which, we think, makes an ideal stand; as every seed will not produce a plant, it is wise to sow the seed a little closer than this. Nothing is gained by having the rows too close together or planting too close in the row, as they crowd each other like weeds.

To determine the advisability of planting soy beans solid for hay, we sowed two fields in this way the past season, and our experience leads us to believe that on very clean ground that is not likely to suffer from drought, this method, by saving cultivation, will be satisfactory, although we do not think that the yield of forage was much greater, or of better quality, than when seeded in drills and cultivated. On ground that is at all weedy, do not attempt to sow broadcast, as the weeds will surely choke the beans.

For planting we have been using a Black Hawk planter with bean plates, and a Superior grain drill, both with comparatively good results. We prefer the latter method, especially since it enables us to plant three rows at once, and to inoculate at the same time, putting our inoculating soil in the fertilizer box, stopping all but three of the outlets, and thus dropping what inoculation we want in the bottom of the furrows along with the beans, where it is immediately covered. This method reduces the amount of soil required to about thirty pounds per acre, and we secured the most perfect inoculation we ever saw by its use.

While, as stated, most of our varieties will ordinarily produce seed if planted up to June 20th, we advise planting as near May 20th, or June 1st as possible. If your soil is in nice condition, and the weather warm, they will come up quickly ahead of the weeds and before the ground has time to crust. If sown in cool weather, the ground is very likely to crust before they will come through. Some of the most successful growers run a weeder over the field almost immediately after planting. We believe this to be all right, provided caution is used not to use this machine after the plants have germinated, and when they are just ready to come through the ground. One year we ruined a field by using a weeder just as the plants were ready to come through, the machine breaking off many of the cotyledons. Just as soon as the plants appear above ground cultivation must begin, because it is important that the weeds be kept down while the plants are young. Cultivate as you would corn. We use a Buckeye pivot beam two-horse cultivator, which is by far the best machine for this purpose which we have ever seen. The plants need about as many cultivations as corn does, but the cultivations must be given while the plants are young. It is all right, in fact it is wise, about the second cultivation to throw quite a little earth to the row in order to smother the weeds. After the second cultivation, practice absolutely level cultivation, trying to leave the ground as little ridged as possible, not only for the good of the growing plants, but in order to make harvesting easier. As soon as buds appear, cultivation absolutely must cease. We do not even allow weeds to be pulled after this time.

Inoculation—A study of Table 1, page 37, ought to be convincing as to the advisability of inoculating this plant. Note the very great difference in nitrogen draft between the inoculated and not inoculated beans. As a rule, Soy Beans do not carry their own inoculation.

Growing them several years on the same ground does not even seem to get the inoculation. Unlike alfalfa, they will grow and even thrive apparently well enough without inoculation, and without developing any nodules. They will yield a good quantity either of forage or grain without inoculation, but they are certainly drawing their nitrogen from the soil when they do this, and for the good of the soil we simply must get their bacteria to them. As is also more than probable that without inoculation the analysis of the plants will be lower in protein than when they have inoculation, and that the yield of both grain and forage will be somewhat larger when inoculated than when not inoculated. Some farmers have the notion that soy beans do not benefit the soil like other legumes. This idea we think they have obtained almost entirely as the result of growing the beans without inoculation, our own experience being that they do bring the soil up remarkably. Soil from an old soy bean field is much more certain than any other method. Cultures may be obtained from the Department of Agriculture at Washington, but they are not certain. We have many requests for soil from our fields, and always refuse to sell this.

Soil for inoculating Soy Beans may be obtained from A. A. Parsons, Plainfield, Indiana, at a cost of 75 cents per 100 lbs. The Farmers' Exchange of Schellburg, Pennsylvania, also has it for sale.

HARVESTING FOR GRAIN—When the beans begin to ripen, nearly all the leaves will fall. This year we had a splendid success by beginning to cut when the upper half of the stalks showed dry pods, the lower half of the pods being still green.

We used this year almost exclusively a McCormick self-rake, and we now believe that properly handled this is the ideal machine for harvesting them. It gathers them into bunches, dropping at the driver's will, and lays the bunches in the center where neither horses nor wheels can run over them; consequently there is no shattering. The only place that this machine will not work is on wet ground, or where the beans are very short, when they must be either mown with a mowing machine or pulled by hand. Harvesting at the stage we did ours this year, we could run the machine all day and cut about fifteen acres. We shock them immediately if they seem dry, or if quite green we let them stand about two days. We shock in small shocks, and let them stand about two weeks, when with favorable weather they will do either to thresh or put into barn or stack. When threshed for grain alone, an ordinary threshing machine with the concaves removed will do the work fairly well. This machine, however, will split a great many beans, and when desired for seed a regular bean thresher must be used.

SOY BEAN JET

MAKING SOY BEAN HAY—September is the most satisfactory month for making soy bean hay. Begin cutting as soon as the dew is off the plants and continue the rest of the day. Let the plants lie in the swath until the leaves are well wilted, but rake them before the leaves become dry and brittle. They should be left in the windrows for a day or two, then put in small cocks. Three to six days of good weather are required for making soy bean hay. The hay when dry should be

placed in good-sized stacks or under a shed. When stacked in the open field the hay should be protected by grass or canvas covers, as it does not shed rain well.

Each year convinces us more and more of the advantages of the best varieties. We have now tested out practically all of the new Government varieties as well as all of the old standard kinds, and we believe that we have retained all the varieties that will give the best results in the Corn Belt. Furthermore, we see positive results from our selection of high yielding strains of these best varieties. Wing's Extra Select Sable and Wing's Extra Select Peking both trace to extremely high yielding strains, and, we are certain, show superiority over the original stocks which we started with.

We believe that we are the largest retailers of Soy Beans in the United States. Possibly we retail as many as all the rest of the dealers put together. We believe, also, that we are spending more money to test varieties of these beans to ascertain which are the good ones, and to perfect them, by plant row breeding and selection, than any other firm in the United States. We think that we can see decided improvement in our varieties from the breeding work which we have done with them.

WING'S MIKADO—A splendid variety, a little better adapted to grain than hay, as the stalks and branches are a trifle coarse. On moderately good ground we think this variety will yield as heavily as any which we have as yet tested. It will also stand poor ground better than many other varieties, but succeeds best on moderately strong ground. The habit is splendid, plants perfectly erect, leafy, branching. Height two to three feet, will mature in one hundred and twenty to one hundred and twenty-five days. Sow about twenty pounds seed per acre. This bean has a record in test plot of thirty-seven bushels per acre, and in the field will make thirty bushels under favorable conditions.

WING'S MONGOL—A variety secured in 1908. This bean is very similar to Wing's Mikado, a remarkably heavy yielder of grain, the sturdy stalks making it more of a grain than forage variety. It prefers a moderately strong soil; on such soil it will yield as heavily as any variety which we have tested, but it will not stand really poor soil particularly well. It matures in about one hundred and fifteen days. Sow twenty pounds seed to the acre. We believe this bean will make thirty bushels to the acre under favorable conditions.

A FIELD OF PEKING SOYS JUST RIPENING. THIS LOOKS LIKE 30 BUSHELS PER ACRE

WING'S SABLE—A remarkable variety secured by us in 1908 and considerably improved by us since that time. It does practically as well for us on one kind of soil as on another, will yield well on poor soil and does splendidly on rich soil. The habit is perfect, plants perfectly erect, pods forming well off the ground, thus allowing easy harvesting, the branches and stalks when only a few inches above the ground becoming slender, making this bean admirably adapted to forage if desired. We believe it entirely practical to obtain a yield of thirty bushels per acre on a large acreage of this bean. It requires one hundred and twenty days to mature. Sow about fifteen pounds seed to the acre.

WING'S EXTRA SELECT SABLE—This stock is all grown from tested plants which made a high yield in test plots, and we think shows a good improvement over the original stock, fine as it was.

JET—Has a test plot record of thirty-two bushels per acre. A variety splendidly adapted to forage, and reasonably good for grain, requiring about the same soil as the Peking, that is, just moderately fertile. Habit is good, not quite so perfect as most of our other varieties. Matures in about one hundred and fifteen days. Requires about eighteen to twenty pounds seed to the acre.

PEKING—Up to this year, this variety has not stood poor ground as well for us as Wing's Sable, but this year there is no perceptible difference whatever, and our yield of Peking on poor soil, while not threshed as this catalogue goes to press, looks to be as heavy as any crop that we ever saw under field conditions, and we hope for a yield of thirty bushels per acre. It matures in about one hundred and fifteen days. Requires fifteen pounds seed per acre.

WING'S EXTRA SELECT PEKING—This seed comes from selected, very high yielding, individual plants tested out in test plot, as our Extra Select Sables were, and we think shows considerable improvement over the original stock. This stock includes seed from the highest yielding plant we ever saw; that is, 6 oz. for one individual plant.

WILSON—This variety in some ways excels all our others as a forage bean. On very rich soil we have seen it grow eight feet tall. The stalks and branches are slender, and on rich soil become somewhat vining at the tips. We think probably it would make a little the most hay, and a little the best quality, of any variety which we handle. Up to this year it has been an unsatisfactory grain producer, but this year did better, and it is possible that we are getting it acclimated. It stands poor soil about as well as any variety which we have tested, but when grown for forage we would put it on the best ground. Requires about fifteen to eighteen pounds seed per acre. Matures in about one hundred and twenty-five days.

ITO SAN—An old standard variety, one of the first and best sorts grown in the United States. Especially

SOY BEAN, WING'S MONGOL

SOY BEAN, WING'S SABLE

adapted to latitude 41½ degrees, or north of that. A heavy yielder of grain, should make twenty bushels per acre, not particularly suitable for hay on account of not making as much of it as the other varieties we sell, but quality of hay would be all right. Would probably make one to one and one-half tons per acre. Habit not as good as with our other varieties. It will mature in about one hundred and five or one hundred and ten days. Sow twenty pounds seed to the acre.

MAMMOTH — The Mammoth Soy Bean will rarely mature seed north of the Ohio River, but we handle southern grown seed, as some of our customers desire it. This bean is satisfactory for ensilage, and all right to plow under. It would not be nearly so good as our Sable, Jet, Peking or Wilson for hay.

Clovers

Red clover seed is often badly mixed with injurious weeds, such as buckhorn, plantain, dodder, etc. Great care should be exercised in purchasing clover seed, since life is too short to be spent in eradicating unnecessary weeds

We handle an export grade of Red Clover, which we call our W. B. brand. It is of a quality so superior, that we are forced to ask a rather high price for it, but there are very few seedsmen handling anything as good as this is. Many of our customors have been surprised when they saw our seed, and they have stated to us that they have never seen any Clover Seed as good as ours.

MEDIUM RED CLOVER—Biennial, 2 to 4 feet—This is the common or medium clover, the one most universally grown throughout the country. On fertile soil, and especially where hay is desired, it has only one superior, and that is Alfalfa.

MAMMOTH CLOVER—Biennial, 2 to 4 feet—For impoverished soils, or for pasturage, we think this variety excels the medium. On impoverished soils it does not grow too rank or coarse, and in a pasture it retains its greenness throughout the summer much better than the medium does, and also furnishes a larger amount of forage. It is also better adapted to fertilizing the soil than the medium, as it grows much ranker and coarser, making more to plow under. It is not nearly so valuable for hay when grown on fertile soil as the medium, because it is too large and coarse.

ALSIKE CLOVER—Biennial, 1 to 3 feet—This plant ranks nearly as valuable as the medium for ordinary soils, and in special conditions is much better. The plants are smaller, and ordinarily it produces a somewhat lighter crop than the medium, but as it is also much more closely eaten by stock, there is less waste. The quality of the hay is better. As the plant is a perenial while the medium is a biennial, it makes more of a permanent meadow or pasture plant. It succeeds on impoverished soil or acid soil better than the medium, and on wet soil it is invaluable. It will not, of course, grow in water, but will stand more moisture than the other clovers. It is fibrous-rooted, and will not heave out in winter.

WHITE CLOVER—Perennial, 4 to 9 inches—This is the common little running clover found in most good pastures. Its chemical analysis shows it to be richer in protein than almost any other legume which we grow for forage. It is, of course, too small to grow for hay, but it is invaluable in all pastures, and no pasture mixture would be complete without it; in fact, we can thoroughly recommend discing old blue grass pastures and sowing a mixture largely composed of this clover to improve both quantity and quality of the pasture.

CRIMSON CLOVER—Annual, 1 to 3 feet—Throughout many sections of the country this plant has accomplished wonders, principally in building up poor soils. Its usefulness is mostly confined to its fertilizing value, as the hay is not very well relished by stock, although if cut green it makes a fair quality of hay. In the Atlantic and Southern states, its usefulness can hardly be overestimated, as it has redeemed thousands of impoverished fields at an extremely moderate expense. It is usually sown in the fall, allowed to come into bloom, which it does quite early in the summer, then either cut for hay, or plowed under, and another crop grown the same year. It could be sown in the spring, when it would mature a crop before fall.

Melilotus or Sweet Clover

Annual or Biennial, height 1 to 9 feet.

We are glad to note that farmers generally over the country are changing their views with regard to this plant. A few years ago it was usually regarded as a pest; then we found that it was a very valuable crop for fertilizer, and finally we have demonstrated without a chance for contradiction that it is a valuable pasture and hay crop, and thousands of farmers so regard it today. We are growing it ourselves on our own farms, and we see no good reason now why it should not take a strong position in permanent agriculture within a short time.

There are three species: the Melilotus Alba, Melilotus Officinalis, and Melilotus Indica. The Alba is the species most widely distributed and the most valuable one. On ordinary soils it grows six feet tall. Its blossom is white. It is biennial, the hardiest and sturdiest of the three varieties.

Melilotus Officinalis is biennial, has a yellow blossom, ordinarily grows about four feet tall. Both these varieties are used for hay or pasture, but the Alba is preferable, because stock will not bloat on it, while they sometimes will on the Officinalis. Also the Alba is a heavier producer both of forage and seed, and more certain than the Officinalis.

Melilotus Indica is annual, and has a yellow blossom. It ordinarily grows one to two feet tall. Its value is entirely as a fertilizer. We recommend its being seeded in corn at the last cultivation, allowed to stand all winter as a cover crop, and plowed under in the spring. The advantages of Melilotus Indica are, first, that the seed is inexpensive, second, that it makes a quick growth, thus being suitable for summer seeding, and third, that its stalks are slender, thus decaying rapidly and

SOY BEAN JET

SOY BEAN PEKING

making its plant food quickly available for the next crop.

Now, just a word to the men who are still skeptical about the usefulness of Melilotus as a pasture or hay crop. Stock do have to learn to eat this plant, but turn them on it, if it is pastured, early in the spring when green stuff is just starting, and see how quickly they learn to eat it, and how greedily they eat it all the rest of the season. This is the way we do. Our stock keep it grazed right down to the ground, leaving rank blue grass close beside it, just as long as they can get a mouthful of the Melilotus. When you cut it for hay, do not let it get too ripe.

Melilotus analyses about the same as Alfalfa, and is a very heavy producer of forage. Our experience is that probably no legume which we have today will furnish more pasturage, and it also produces large amounts of hay. We pastured fifty-six hogs, averaging between one and two hundred pounds, on an acre for six weeks, turning on it when about three feet high, and in that time they ate it down to about fifteen inches. Our stock have to learn to eat the hay. It requires a few days' time to do this, but our work horses and our cows eat it as greedily as they do Alfalfa as soon as they learn the taste of it. There is no more waste noticeable in feeding it than in feeding the best clover hay. Of course, we take care of the hay, cutting it before becoming too ripe, saving it with the leaves on, in short, giving it the same care and attention that we would any other hay plant.

SEEDING MELILOTUS—Melilotus, when once established, will grow on decidedly poor ground, in this respect being superior to alfalfa and other clovers, but it is a mistake to think that it is remarkably easy to establish a stand of it. We have had no trouble ourselves, but other farmers assure us that in some ways it is more difficult to get a stand than it is with alfalfa and other clovers. With our own experience, we have seeded either with oats or barley, which we cut for hay, or with a light seeding of oats and Canada peas, which we pasture off, and we have had no trouble with either method. There is one absolute necessity: Melilotus requires as much lime in the soil as alfalfa itself. It needs inoculation about as badly as any legume we know of, and this should always be supplied to it. We have seeded in April, May, June, July and August, and have succeeded with every seeding. We slightly prefer April seeding, because it requires a fairly good amount of moisture to secure proper germination of the seed. After the plants are two inches tall, they stand drought remarkably well, in this particular resembling Alfalfa, and succeeding much better than Medium Clover. There is one point that is firmly impressed upon us, that Melilotus seed must not be deeply covered; a half inch is plenty. Have your sub-surface firm; this will help prevent too deep seeding. Fields that are too mellow, even when presenting the appearance of a perfect seed-bed, are likely to give too deep a covering, and to succeed much less satisfactorily than harder fields where your covering is light. On this account we can recommend double discing stubble ground, preparing a mellow surface an inch deep in preference to plowing the ground and having a mellow surface four inches deep. Also, for this plant we can recommend the special Alfalfa drills, which enable you to sow just as shallow as you wish to and still to cover the seed.

We use just about the same methods that we would in seeding alfalfa as to preparation of seed-bed, amount of seed per acre, depth and manner of planting, nurse

crops and fertilizers, and so far our experience indicates that the two plants are enough alike so that this is a good system.

SEED—Until the past year or so, it has been almost impossible to secure proper seed of Melilotus, but it is a trifle easier now. Originally this seed was gathered by very primitive methods. It was left unhulled. It frequently heated, and the unhulled seed containing quantities of immature seed showed very low germination. There is a great deal of unhulled seed sold now, but our experience with it has been such that we refuse to handle it at all. The hulled seed will usually give good results, although Melilotus naturally contains more hard seed which refuses to take up water, and which germinates three or four months or a year after being seeded, than any other legume that we know of. We advise using twenty pounds seed per acre, and using nothing but the hulled seed.

HARVESTING FOR HAY—The biennial varieties of Melilotus seeded in April should make one light cutting of hay the first year and probably two the second year, when it seeds. The rule with regard to cutting alfalfa, that of watching to see that the buds have started from the crowns, is even more applicable to Melilotus than to Alfalfa.

We have never as yet cut our Melilotus fields the first season, even if they were seeded in the spring, although it is said that a light crop of hay can usually be removed without injuring the plants. The second year a very satisfactory crop of hay can be removed about June 1st, when coming into bloom, but you must cut the plants eight inches or a foot high, or else you will kill them at this time. After removing this hay crop, a second crop of moderate size may be secured, or a moderate-sized crop of seed. To obtain the maximum crop of seed, it is recommended not to cut any hay off at all. Cure the hay much as you would alfalfa, raking before the leaves become dry enough to shatter, then placing them in moderate-sized shocks, and forgetting about them for about a week, when they will be in good condition to go into the barn. It is not necessary to try to cure in the swath or windrow, or to go to a great deal of labor opening out the shocks, etc.; just shock it up before it gets too dry, and leave it alone for at least a week.

HARVESTING FOR SEED—Melilotus Alba occasionally yields as high as ten bushels of seed per acre, and we see no reason why it would not be extremely profitable to save it for seed. The method of harvesting for seed at present is about as follows: It is cut when the plant seems to have about the maximum amount of ripe seed it is likely to have. The plant is peculiar in that it will have at the same time, blossoms, green seed, ripe seed, and early matured seed which is falling off. It is cut with a self-binder and cured out in small shocks. It must be cut while the dew is on in the morning. One very successful grower threshes by first running the seed through a grain separator, which threshes it clean enough, but leaves it in the hull, and then running through a clover huller. We presume that his reason for this is that the heavy stalks may be a little difficult to feed through the clover huller. If left in the hull for any length of time, great care must be used that it does not heat.

MELILOTUS AS A FERTILIZING PLANT—Some of our customers have poor fields which are so thoroughly worn out as to become unprofitable, and they want a crop that will add fertility to these worn-out fields, with a minimum of labor. The Melilotus Alba is peculiarly well adapted to this purpose. By consulting Table 2, p. 35, you will note one fact, that our estimate makes this the greatest fertilizing plant that we have, and we think actual results, especially where the land can be turned over to the crop for at least two years, will bear this theory out perfectly. Once established it will reseed itself, both roots and top in their decay adding nitrogen to the soil, and no attention need be paid to the field after the plants are once established until it is desired to plow it for some other crop. These worn-out fields must, of cyurse, have enough lime, or else the Melilotus will not live. It would also be very wise to add liberal amounts of phosphorus, as the Melilotus cannot do this, and the application of phosphorus would also feed the Melilotus, producing a considerably larger crop than would otherwise be obtained. It is possible that the winter vetch could be seeded with the Melilotus, and that it would reseed itself, although our own experience with the vetch in reseeding itself has been decidedly disappointing.

Grasses

BROMUS INERMIS or AWNLESS BROME GRASS—Perennial. Height 3 to 5 feet.—This valuable grass was introduced about fifteen years ago, our own farm being one of the first places in the United States where it was used. It produced about the same amount of forage as timothy; is somewhat more reliable than timothy, because you do not need very many plants the first year. It will thicken up rapidly, and in a meadow eventually become too thick. The hay is about the same as timothy, although

KENTUCKY BLUE GRASS

on our own farms we rather prefer the Bromus. As a pasture plant it is decidedly valuable; it comes on early in the spring, does not become particularly woody at any time during the summer, stays green and succulent, and is greedily eaten by live stock. In fact, the one disadvantage about it is that stock like it too well, and in time, if closely pastured, will gnaw it out and kill it. It stands drought very well, does well on either poor or rich soil, and is one of the best grasses we have ever used on low, wet, or mucky soils. Several years ago, all commercial samples of this grass were found to contain quack grass, and we refused to handle it at all, but we have secured a moderate amount of seed which was grown especially for us from pedigreed seed, that is absolutely free from quack grass, we believe the only such seed that can possibly be obtained in the United States. We slightly prefer sowing this grass in the spring, using 10 or 15 lbs. seed per acre.

KENTUCKY BLUE GRASS—Perennial. **Height 10 to 15 inches.**—This is too well known to require description. We recommend sowing (if alone) about 40 pounds per acre.

CANADA BLUE GRASS—Perennial. **Height, 6 to 12 inches.**—Succeeds on soil too poor for Kentucky blue grass. It is well relished by stock, and especially recommended for cows. It should form a portion of the mixed grasses for permanent pastures in most parts of our country. Sow (if alone) about 40 lbs. per acre.

ORCHARD GRASS—Perennial. **Height 12 to 30 inches.**—This grass is invaluable for pasture, but not very well suited for meadows. It will stand more abuse, hard tramping, poor soils and drought than any other grass which we handle. It starts early in the spring, and furnishes green pasture among the earliest of our grasses. In the middle of the summer a pasture of it should ordinarily be mown, as it tends to become woody, and after mowing it will start up fresh and green, and make abundant fresh pasture. It also thrives exceptionally in shady places. It is nutritious feed, and properly handled will be readily eaten, although after it becomes woody, stock will usually prefer other grasses to it. Sow in the spring 20 to 25 lbs. per acre in well prepared soil, covering lightly.

TALL MEADOW OAT GRASS—Perennial. **Height 2 to 5 feet.**—We find this to be one of the most useful of the new grasses, and we are decidedly well pleased with it, either for hay or for pasture. As a hay plant it compares favorably with timothy; as a pasture grass it compares favorably with Bromus Inermis. It stays fresh and green when many other pasture grasses are dried up. It stands punishment well, is especially adapted to poor soils, to sour soils, and to heat. We have found it one of the best grasses for the Southern states. Sow 40 or 50 lbs. to the acre.

ENGLISH OR PERENNIAL RYE GRASS—Perennial. **Height 15 to 24 inches.**—A valuable grass for permanent pastures, or for lawn mixtures. It produces an abundance of fine foliage, forms a compact sward, and remains bright and green throughout the season. If cut while in bloom it is a nutritious variety for hay, although it becomes woody later. Thrives best in soil that is not too dry. Sow (if alone) 60 to 70 pounds per acre.

RED TOP—Perennial. **Height 1 to 2 feet.**—So well known as to hardly need description. It is often sown with timothy and red clover to make a heavier yield of hay. It prefers moist, rich soil on which it should reach a height of from two to two and one-half feet. It is also recommended in parts of the country as valuable grass for permanent pastures. Sow (if alone) about 40 pounds per acre.

MEADOW FESCUE—Perennial. **Height 18 to 24 inches.**—This grass is one of the most reliable and dependable for a wide range of territory of any that we have,

and will compare both in yield and feeding quality with any other grass grown in America. In yield it would probably be a little less than Bromus Inermis in feeding quality about the same. It is well relished by live stock, succeeds all over the Corn Belt and New England States, and is especially adapted to wet soils. Sow (if alone) about 55 lbs. per acre.

TALL MEADOW FESCUE—Perennial. Height 3 to 4 feet.—A similar grass to Meadow Fescue, although a little more valuable, as it makes a little more feed, and seems to be just as palatable. Is adapted to the same purposes as the Meadow Fescue. Sow, if alone, about 35 lbs. per acre.

RED OR CREEPING FESCUE—Perennial. Height 2 to 2½ feet.—This grass is recommended on account of its ability to withstand drought. It roots deeply in the soil, and remains fresh and green when other grasses are apparently dried up. It yields a good bulk of herbage of fair quality. It is most nutritious at time of flowering. Sow (if alone) about 35 lbs. per acre.

SHEEP'S FESCUE—Perennial. Height 6 to 20 inches.—This grass is especially recommended for good upland or dry pastures, and for sheep grazing, being very much relished by them. It is slightly deficient in quantity of forage produced, but it is so nutritious as to counterbalance this deficiency. It is also recommended for lawn mixtures. Sow (if alone) about 30 lbs. per acre.

TIMOTHY—So well known as to need neither description nor recommendation. We handle only the very best seed, an export grade sold by few other firms. It is generally best to sow it at wheat-seeding time. Spring seeding in this vicinity or this latitude is not so certain as the fall seeding.

THEORY OF MEADOW AND PASTURE MIXTURE—Mixtures are absolutely all right. Two grasses grown together will nearly always yield more than when they are grown separately. Three or more grasses will nearly always yield more than two grasses, or than when all are grown separately. Furthermore, two or more grasses grown together exhaust the soil less rapidly than one grass grown alone. Upon these principles rests the entire theory of all mixtures. For example, timothy and medium red clover grown together will make a larger yield than either one grown singly; the addition of red top will still more increase the yield; the addition of alsike will still further increase it, and improve the quality as well.

TEMPORARY MEADOW AND PASTURE MIXTURE—Meadows intended to be plowed up in three or four years' time will yield more and better feed when a mixture is used than when one grass is sown alone. The same theory applies to this that applies to all other mixtures.

If you care to avail yourself of our knowledge and experience in this matter, we will be glad to make special meadow mixtures for either moist or dry soils, for limestone or freestone soils, and to make mixtures containing either a preponderance of clover or a preponderance of timothy with some clover. We will make the same rule about this that we make about our other special work, and will decline to make special mixtures during our rush season (March).

PERMANENT MEADOW AND PASTURE MIXTURES—We make a specialty of meadow and pasture mixtures. This our practical knowledge of the subject enables us to do.

We have carefully studied all the grasses, and the clovers especially, for many years. We have studied them not only at home, but in all sections of the country. We feel entirely competent to make mixtures for any purpose, and have furnished them for a number of large estates in different parts of the United States.

We have some demand for permanent meadow mixtures, but have not handled these heretofore, because we thought the principle bad; that meadows should not be left in permanently; but where it is desired to cut for hay for one or two years and then turn into a pasture, as many farmers wish, the idea is all right, and this year we are preparing mixtures for this purpose. Our dry and moist permanent meadow mixtures are designed for this purpose. We do not sell or recommend any mixture which is expected to be cut for hay for more than two or three years at the outside. Alfalfa can be cut for more years than this, but no mixture with which we are familiar can be recommended for this purpose.

Upon request, and upon receiving careful description of your soil, we can vary these mixtures to meet special requirements, and are glad to do so without extra cost. However, if you want special mixtures, by all means give us your order before the rush season, because we have all that we can possibly do with our regular work at that time, and cannot possibly get out special mixtures.

DRY AND MOIST PASTURE MIXTURES—The expense of having this mixture amounts to little more than where you have only two or three kinds of grasses. For ourselves, we would never be contented to seed a pasture without having a large amount of clover added to the mixture. The several different varieties of clover are well adapted to this use, and not only do the stock thrive on them, but they enrich the soil at the same time and actually stimulate the other grasses. We prepare a dry pasture mixture and a moist pasture mixture. These mixtures both contain the proper amount of clover and also a large variety of the finest pasture grasses. Upon request we will make this mixture in any proportions which our customers desire and from any varieties of grasses found in our catalogue. If you desire any special mixture or any special proportions, write us before you are ready to order and we will estimate the cost. Where it is left to our judgment, we will use in the Dry Pasture Mixture the following varieties of seed:

Timothy, Medium Red Clover, Mammoth Clover, White Clover, Melilotus, Orchard Grass, Tall Meadow Oats, Tall Fescue, Creeping Fescue, Sheep's Fescue, Kentucky Blue Grass, Canada Blue Grass, Alfalfa, and Bromus Inermis.

Moist Pasture Mixture: Timothy, White Clover, Alsike, Medium Red Clover, Mammoth Clover, Melilotus, Kentucky Blue Grass, English Rye Grass, Meadow Fescue, Sheep's Fescue, Tall Fescue, Red Top, Orchard Grass, Tall Meadow Oat Grass, and Bromus Inermis.

These mixtures should be seeded by hand, and it would be better to sow them either during April or May with a nurse crop, or else in July without one; in short, apply the same rules as to time of seeding that you would apply to Alfalfa. These mixtures must be sown on well prepared soil and covered with a weeder or some such tool. Upon request we will furnish mixtures suitable for renovating old pastures and stumpy ground, although the same results cannot be expected on this soil that would be secured where a fairly good seed-bed can be prepared.

SOWING PASTURE MIXTURES—Of the Pasture Mixtures sow 18 to 20 lbs. per acre; of the Meadow Mixtures sow 22 to 30 lbs. per acre.

WINTER VETCH
Harvesting for Hay. (Courtesy of the Practical Farmer.)

Vetches

WINTER VETCH, VICIA VILLOSA, HAIRY OR SAND VETCH—We have experimented with the Vetches, and particularly Winter Vetch, Vicia Villosa, for ten years, and each year we learn to like it better. During the season just passed we have grown it on one hundred and seventy-five acres in connection with Soy Beans, with gratifying results; we have tested it out with different rates of seeding, different times, and in connection with different crops, and are more and more pleased with it the more work we do. Reference to our table of analysis, page 44, will show you the feeding value of the hay; reference to Tables 1, 2 and 3, pages 35, 36, will, we think, be convincing as to its comparative usefulness as a protein producer, and as a soil restorer in adding nitrogen. We have used it very little for hay, somewhat for pasture, and a good deal to plow under. There is no question as to its value as a hay crop, especially where you are in need of this sort of a catch crop. Grown with a grain crop to support it, it will make a reasonably good yield of hay, analyzing a little better than Alfalfa. However, it is as to its value as a nitrogen gatherer to plow under that we are at present best informed, and for this purpose no other plant that we have will quite do the same things. It is almost universally conceded to be the best cover crop which we have, and we believe that for the Corn Belt no other crop will succeed as well as it will for sowing in corn at the last cultivation, and plowing under the following spring. If it is used for this purpose, if possible, the rotation should be so handled that the Vetch can be left until May 15th before plowing under; at this time your fields will be a mass of green stalks and leaves, about all that you can turn under with a plow, and you will note by Table 2, page 35, that we estimate 95.9 lbs. nitrogen to be gathered from the air by a good crop of this plant; this is sufficient to furnish all the nitrogen required for about a ninety-bushel corn crop, this nitrogen at present prices of commercial fertilizer being worth $20.88.

SEEDING—Winter Vetch may be handled in a good many different ways, and it has given dependable results in any way that we have ever tried it. It may be seeded in April with Canada peas and oats, when it will come on after the peas and oats, furnish summer pasture, or with oats or barley (in our test plots it came on satisfactorily after the grain crop was removed) and would furnish a reasonable amount of summer pasture, or it may be seeded, from our experimental knowledge, at any time during the summer without a nurse crop, when it would furnish good summer or fall pasture. We

WINTER VETCH
Plants in Full Bloom. (Courtesy of the Practical Farmer.)

would say that in our opinion this method, while satisfactory enough, will not give quite as good returns for your money as the other methods which we will describe. Winter Vetch seems rather to make its best growth in cool weather, and when not bothered too much with shade. If seeded in the spring with the crops already mentioned, the hot weather comes on too soon to please it, and also the shade bothers it, so that with us it does not make its maximum growth. Furthermore, if seeded any time before July 1st, it is our experience that it will winter-kill the first winter, while if seeded later than that, it goes through the winter all right. If seeded early in the spring or summer without a nurse crop of any kind, our experience is that it makes a better growth and furnishes more pasture, probably giving better returns for your money than if it were seeded with a nurse crop. For the very best returns from the use of this plant we find that seeding with Soy Beans at time of sowing the Soys, or else in corn at the last cultivation, or on stubble ground or cultivated ground preferably during July (if necessary somewhat later than this), and either in connection with rye or alone, will give excellent results, particularly so if the rotation is so adjusted that the plants do not need to be plowed under until about May 15th following. If sown with rye in the fall they will furnish an abundant amount of early spring pasture, coming on vigorously and lasting until late in June, when the plant seeds and dies.

ALFALFA GROWERS' PICNIC AT WOODLAND FARM, MAY 28, 1913.
On the platform are shown the speakers, Governor Cox, Joseph E. Wing, President of the Association, A. P. Grout, H. C. Price, A. P. Sandles, P. G. Holden, and C. H. Allen. Over 3,500 people attended this picnic.

Now, to compare results on these different methods. If seeded with Soy Beans the minimum amount of seed is required. We use only 20 lbs. Vetch and 18 or 20 lbs. Beans, mixing thoroughly in the hopper. The two plants do not greatly interfere with each other. The Vetch grows slowly early in the season, and cultivation of the Soys does not greatly interfere with it. If the Soys are very thick, they will shade the Vetch a little too much for it to do its best. After cultivation of the Soys is over with, the Vetch will spread out and by fall will pretty well cover the ground; will thus furnish considerable fall pasture if desired, or, in our opinion, would make $8.00 or $9.00 worth of nitrogen to plow under. Seeded in this way, the probabilities are that the plants would winter-kill. Seeded in corn at the last cultivation, the plants will secure a good start before winter, will come on early the next spring, and on May 15th will, as already stated, with a good crop furnish as much as 96 lbs. of nitrogen per acre, costing you not more than $5.00 and worth about $21.00. Equally satisfactory results would be obtained by sowing on stubble ground, after potatoes, etc., seeding preferably during July or August, and in our opinion not sowing later than September 15th throughout the Corn Belt. If desired for spring pasture or for hay in the spring, we advise July or August seeding, either with or without rye as preferred, but we would use rye in connection.

AMOUNT OF SEED PER ACRE—Sowing with Soy Beans, use 20 lbs. seed to the acre; sowing in any other way, about 40 lbs. to the acre; if sown in the fall with rye, use 40 lbs. Vetch and 1 bushel of rye. The Vetch and rye, or Vetch and beans may be mixed together and sown with grain drill.

SEED BED—We have always used a well prepared seed bed, and would consider this a necessity. The seed should be covered about an inch, but do not cover deeper than this if you can help it.

INOCULATION—Our experience has been that Vetch is quite exacting about inoculation. Some customers say that they succeed without it, but we failed dismally until we got inoculation. It is possible that garden peas have the same inoculation that vetches have; also swampy ground pretty much all over the country contains wild vetch, which, of course, would have the same inoculation. Within another year or so, doubtless soil from Vetch fields will be for sale. We never sell soil from our own fields. Inoculation may be secured from the Government or from the commercial forms which are on the market, with reasonably satisfactory results. We can furnish the commercial cultures ourselves, if desired, at $2.00 per acre.

HARVESTING.—We have never made any Vetch hay, but our experience with the plant leads us to think that it would need to be handled practically the same as Alfalfa, that is, to be raked and shocked before the leaves got too dry, and cured out for four or five days in the shock before putting into the barn.

HARVESTING FOR SEED—We will harvest our first crop for seed in the summer of 1914; obviously, all that we know about harvesting this is what we have read. The seed is said to shatter very easily, and on this account shock covers are recommended. It is said to be necessary to grow it with rye in order to hold it off the ground and make harvesting by machinery possible, and it is recommended that it be cured out in the shock for perhaps a week before being threshed. The seed can be separated from the rye by certain machinery, or by the use of an inclined canvas belt, which carries the rye up, but the Vetch seed being round rolls off.

SEED—American-grown seed of Winter Vetch is almost an unknown article, but is said to be much hardier, better acclimated, and a better producer than the ordinary or European-grown seed. In the fall of 1914 we expect to offer a moderate amount of seed of our own growing, probably the only such seed that will be offered, and from our information it ought to be much more valuable than any other commercial stocks.

SPRING VETCH, VICIA SATIVA, COMMON, SMOOTH or OREGON VETCH—Our experience so far with this variety has been unsatisfactory, and yet our customers tell us that it succeeds with them first-rate. Probably we do not know how to handle it right yet. It is said to make splendid feed when sown with Canada peas and oats, and to make a splendid amount of growth when it does right. Sow about 60 or 70 lbs. per acre with a bushel of oats and 45 or 60 lbs. of Canada peas. Seeding should be done early in the spring, as early as it is practical to seed oats.

Soil Fertility

No one needs to be told of the importance of soil fertility. Already the world is up close to the hungry stage. Notice how quickly the grain markets climb when hot winds are reported throughout the Corn Belt, and corn is known to be suffering, even moderately. If this is true today, how much more will it be true in fifty years with twice the population to support that we have now. The best farmers today are more or less reluctant to admit that most farms have simply been mined during the past fifty or seventy-five years, that they are not even as productive when fairly well cared for as they were ten years ago, that each year it becomes a little more uncertain and precarious trying to get a catch of clover, and that we now must begin to put back some of the elements that we have been mining from the soil all these years in order to even retain the present degree of fertility. A good many of the more progressive farmers go further, and say that they are going to handle their soil in such manner as to make it more fertile than it was the day the forest was removed, and the virgin sod broken. It is to this latter class that we commend the pages in this booklet, and it is this latter class that will be in line to make the most money when with increased population the farmers come into their rightful heritage.

We used to think that rotation of crops, especially if we grew some legumes, would maintain fertility, or even increase it; this theory is untenable. As Dr. Hopkins says, "You might as well rotate your pocketbook between different members of the family." The only reason that rotation accomplishes anything in particular is that it reduces the entire fertility, reduces each element of plant food more uniformily than does a repetition of the same crop. The result in the end would be a more complete soil depletion than by any other method you could use. The theory that growing a legume crop maintains or increases soil fertility, even if the entire tops were removed is equally untenable. Please notice by Table 1 just what we are doing to our soils with each crop that we grow. Notice that Medium Clover with the top removed leaves the soil $2.84 poorer than it found it; that any other legume excepting Alfalfa if the tops are cut and removed leaves the soil still worse off; in fact, that any legume crop if the tops are removed may be as hard on the ground as a grain crop. Table 1 is given to cover nitrogen and phosphorus only, simply because we do not know quite as much about potash as we do about these other elements; the potash draft should be figured in these computations.

Now you will notice from Table 1 that we are mining the soils tolerably fast, and especially in nitrogen, the only exception to this being Alfalfa, which actually adds an appreciable amount of nitrogen each year. In order to maintain the present fertility, we must either return these elements in the form of manure or of commercial fertilizers or of plant residues plowed under. In this chapter we will discuss mostly the returns from manure and from plant residues plowed under, the use of chemical fertilizers being handled in the succeeding chapter. Most of us maintain our soil fertility in part through the use of manures. It is entirely possible to retain all of the nitrogen the plants require, and part of the phosphorus, but to do this requires, first, very careful handling of the manure in order that no nitrogen shall escape through heating and fermentation or through leaching, the only way to prevent this being by the use of concreted covered barnyards and manure pits to prevent the leaching, and by not allowing the manure to stand long enough in a heap to heat and lose nitrogen in this manner. The proper phosphorus content cannot be maintained by the use of manure, because phosphorus goes largely into the bone of growing or fattening animals which we ship to market. You will note by Table 1 that the phosphorus draft does not run into money very fast; it is entirely practical to buy it without a heavy expense. Most farmers do not have enough manure to anywhere near return their nitrogen draft, and it is for their consideration that we offer Table 2. Note in this table that a good crop of Melilotus Alba when all returned to the soil should, by these computations, furnish 138.5 pounds nitrogen, enough to take care of more than a one hundred and twenty-five bushel corn crop without drawing any nitrogen at all from the soil; that $1.00 spent in Soy Beans and the entire crop plowed under will in one season gather about 83 pounds nitrogen, enough for about an eighty-bushel corn crop, and returning to the investor $17.34 net for his $1.00 investment. That Winter Vetch, Vicia Villosa, sown in corn

at the last cultivation, plowed under May 15th following this, with gather about 97 pounds nitrogen, more than enough to take care of a ninety-bushel corn crop without touching the present store of soil nitrogen. These figures are by no means guess work; we actually know what each one of these plants does. The only guess work about it is the estimated yield per acre, which, of course, would vary with different seasons and different treatment. Our yields are estimated for soils that are already a little above the average in fertility. Before publishing them, we submitted them to the Ohio Experiment Station for criticism, and they agreed with us that they were in proper proportion to each other, that the yields were not higher than could be reasonably expected when given fairly good conditions, and that our method of computation was entirely right. Why not try some of these great legume crops to plow under on every farm where the fertility is not already being increased through the use of manure? Nitrogen is the highest priced fertilizer we have, and procured through the form of legumes plowed under it will cost you from one-fourth to one-seventeenth what it will in the form of commercial fertilizers. The cost of these legume crops is not excessive, and with the possible exception of Vicia Sativa, all of these crops are past the experimental stage.

TABLE 1—Draft on Soil of Various Plants When the Tops Are Harvested and Entirely Removed.

Crop	Estimated Yield Per A.	Root %	Nitrogen soil draft	Phosphoric Acid soil draft	Value Nitrogen draft	Value Phosphoric Acid draft	Value Total draft
Alfalfa inoculated, cut for hay.....	7500	42	*26.2	45.7	*$5.76	$4.57	*$1.19
Melilotus Alba inoculated, cut for hay..	7500	20	34.6	42.0	7.61	4.20	11.81
Medium Clover inoculated, cut for hay..	4500	32	1.7	24.7	.37	2.47	2.84
Alsike inoculated, cut for hay.....	4200	20	14.3	21.0	3.14	2.10	5.15
Soy Beans inoculated, cut for hay.....	5250	10	31.9	....	7.01	....	7.01
Soy Beans inoculated, cut for grain....	1200	10	25.8	....	5.67	....	5.67
Soy Beans not inoculated, cut for hay..	5250	..	124.9	....	26.48	....	26.48
Soy Beans not inoculated, cut for grain.	1200	..	99.3	....	21.85	....	21.85
Winter Vetch inoculated, cut for hay...	5250	11	35.8	52.9	7.88	5.29	13.17
Spring Vetch inoculated, cut for hay...	4500	11	30.7	43.5	6.75	4.35	11.10
Cow Peas inoculated, cut for hay.....	5250	6	21.8	27.3	4.80	2.73	7.53
Timothy, cut for hay	4500	..	42.3	22.5	9.31	2.25	11.56
Corn, cut for grain	65 bu.	..	72.2	33.4	15.88	3.34	19.22
Wheat, cut for grain.....	30 bu.	..	44.2	14.3	9.72	1.43	11.15
Oats, cut for grain	38 bu.	..	33.4	15.3	9.35	1.53	8.88
Barley, cut for grain	26 bu.	..	37.8	15.7	8.32	1.57	9.89

*Indicates gain.

In compiling this table we have taken as yield the probable amounts secured on soil a little above the average fertility for the state. Note that a leguminous plant with the tops entirely removed is frequently as hard on the soil as a non-leguminous one, and note with soy beans when not inoculated that a leguminous plant may be much harder on the soil than a non-legume.

The moral is evident: Always inoculate unless certain that your plants will get their own. Finally, note that Alfalfa is the only crop we have in this table which constantly adds fertility to the soil even when the entire top is removed; a brilliant example of "Having your cake and eating it."

TABLE 2—Effect on Soil of Various Leguminous Crops When Entire Tops Are Returned to It.

Name of Seed	Estimated yield per Acre	Lbs. Nitrogen gathered from air per Acre	Value Nitrogen gathered from air	Usual cost Seed per Acre	Gain per A. over cost	Gain % per Acre
Melilotus Alba (Wh. Sweet Clo.)	7500	138.5	$30.45	$4.00	$26.45	661
Soy Beans	5250	83.4	18.34	1.00	17.34	1734
Melilotus Officinalis (Yellow)...	5250	96.9	21.31	4.00	17.31	432¾
Vicia Villosa (Winter Vetch)....	5250	94.9	20.88	5.00	15.88	317 3/5
Vicia Sativa (Spring Vetch	4500	81.4	17.91	2.75	15.16	551¾
Crimson Clover	4500	72.4	15.93	1.60	14.33	895 5/6
Mammoth Clover	6000	68.4	15.05	2.50	12.55	502
Medium Clover	4500	59.8	13.17	2.50	10.67	426 4/5
Melilotus Indica (Annual)	3000	55.5	12.21	2.00	10.21	510½
Cow Peas	5250	49.8	10.95	4.00	6.95	173¾

This table is meant to complete Table 1, using the same plants and the same soil, returning the entire top. Some farmers say they cannot afford to pay, for instance, $5.00 per acre for Winter Vetch seed to plow under. If you had money to invest, and someone offered you 300 per cent. annual interest, would you refuse? Please note the relative position of Cow Peas in this table. At present more Cow Peas are grown to plow under than any other crop we know of. Would it not be wise, by these figures, to change to one of these other crops?

TABLE 3—Protein Production of Various Leguminous Plants

Name of Plant	Estimated yield per Acre	Protein
Melilotus Alba	7500	1297.5
Alfalfa	7500	1095.0
Melilotus Officinalis	5250	908.2
Winter Vetch	5250	892.5
Soy Beans	5250	782.2
Spring Vetch	4500	765.0
Cow Peas	5250	745.5
Oats and Peas	6000	618.0
Medium Clover	4500	558.0
Alsike Clover	4200	537.0
Timothy	4500	270.0

This table is intended to still further complete Table 1, showing the relative importance of our ordinary legumes and Timothy in the production of protein per acre. We would criticise this ourselves by saying that we do not believe Melilotus Alba is a more valuable plant than Alfalfa.

Fertilizers

As already stated, it is generally agreed now that most farmers have for many years been practically mining the soil, and even the most fertile soil will not stand this indefinitely. Average soils throughout the Corn Belt today contain plant food in possibly the following quantities: Nitrogen, 3000 lbs.; Phosphoric Acid, 2000 lbs.; Potassium, 30,000 lbs. Table 1 shows the number of pounds of nitrogen and phosphoric acid drawn from the soil through our ordinary crops. Your soil may be better supplied with plant food than the average, or it may not be so well supplied. If it is about the average you will note that there is about enough nitrogen for forty corn crops, provided you can get every particle of fertility out of the soil, which you cannot do. To purchase nitrogen costs today 20 to 25 cents per pound. Thus corn fed on commercial nitrogen would cost for this fertilizer alone at least 25 cents per bushel. Nitrogen is the most expensive fertilizer we have if purchased commercially; the least expensive if secured through Nature's method of inoculated legumes, which are returned to the

I USED BASIC SLAG ON THIS FIELD

soil. There is about enough phosphoric acid in most soils to last fifty years with ordinary crops. It is fortunate that phosphoric acid is at present inexpensive, because even if all barnyard manure is carefully saved and returned to the soil, we will still be removing some phosphoric acid, on account of the fact that it is largely used in the bone of growing animals which we are constantly shipping to market. As a matter of fact, one of the things that soil experts most thoroughly agree upon is that most soils, in fact nearly all of them east of the Missouri River are now deficient in phosphoric acid, and that applications of it in some form will pay about ninety-nine times out of a hundred; this applies to every crop that we grow. Potash is liberally present in all soils, but very frequently is in insoluble form. Plowing under any form of plant residue, manure, or growing plants themselves, help to liberate both potash and phosphoric acid in the soil. The Ohio Experiment Station seems to have conclusively demonstarted that moderate applications of available potash, say forty pounds per acre every two or three years actually pays a profit of $2.00 or $3.00 to the acre annually. This is doubtless because the great stores of potash in the soil are somewhat insoluble. Acid phosphate is very widely used, and gives good results, but has two objections. Legumes require alkaline soils, and the application of an acid at the time of sowing a legume is the wrong principle; also, scientists tell us that a good deal of the phosphoric acid in acid phosphate reverts or unites with the lime in the soil, becoming quite slowly available. Bone Meal is largely used as a carrier of phosphorus, and there are practically no objections to it. Basic slag is, to our minds, the ideal carrier of phosphorus for legume crops, because it contains 35 to 50 per cent lime, which no other carrier does. It thus helps to create an alkaline condition, it is as quickly soluble as any other carrier, and it is claimed that it does not revert. Also it seems to us that its effect shows distinctly in the soil for a much longer period than does acid phosphate. We have used basic slag where it could be plainly seen for ten years where the material was applied, while farmers complain that the results of acid phosphate are usually noticeable for only one year. Possibly this is on account of its phosphorus having reverted.

There are four principal forms of phosphorus on the market today. The cheapest one is known as raw rock phosphate. This is simply the phosphate rock finely ground and untreated in any way. A pound of phosphorus of this nature costs only about one-fourth as much as a pound of phosphorus in acid phosphate, but the profitable use of the raw rock phosphate absolutely requires either that it be used in connection with liberal quantities of barnyard manure, or plowed under with a green manure crop. In either of these cases, the decaying vegetable matter attacks the rock, making its phosphorus available. If applied to the surface of the ground, or where it does not come into contact with decaying vegetable matter, raw rock phosphate will do almost no good whatever.

WHERE TO OBTAIN PHOSPHORUS — We have established connections with one of the largest and best manufacturers of raw rock phosphate, and can supply this to our customers, when desired, at moderate prices. Guaranteed analysis 12½ per cent Phosphorus, fineness guaranteed to equal that of any other manufacturers in the United States. We advise shipping this in paper lined cars in bulk, and not sacked. A minimum carload contains 22.4 tons.

We have also established connections with one of the largest importers handling the highest grade of basic slag that is produced anywhere, the Key Tree

WHY DIDN'T I USE IT ON THIS FIELD?

Brand Thomas Phosphate Powder, and we can furnish this to our customers in car lots or less than car lots at moderate prices.

There are many brands of basic slag; we consider the best is made by the Thomas Mills and called Thomas Phosphate Powder.

Prices on Key Tree Brand Thomas Phosphate Powder are as follows: Car lots, f. o. b. Baltimore, Md., $15.50 per ton; less than car lots, f. o. b. Baltimore, Md., $17.00 per ton; less than car lots, f. o. b. Mechanicsburg, O., $20.00 per ton. These prices are for the material put up in 200 lb. double sacks. The material in single sacks will be $1.00 per ton less; we do not recommend single sacks in less than car lots; we can ship either way, but we do not recommend it. The minimum weight of a car of this fertilizer is 15 tons. Ordinary crops take out about one hundred and fifty pounds of basic slag per year, and the material is useful for any ordinary farm crop.

We advise using from 300 to 1,000 pounds basic slag per acre. It does not leach, and what is left over will be right there ready for the next crop. Our basic slag is guaranteed to analyze 17 per cent. phosphoric acid, 35 to 50 per cent. lime, 5 to 6 per cent. magnesia.

We handle best grade Bone Meal, Dried Blood, Muriate of Potash, Nitrate of Soda and other fertilizers, and will ship either from our warehouse, Cleveland or Chicago. Prices quoted on application.

Wing's Selected Grains

Barley

CHAMPION BEARDLESS—We are pioneers in growing beardless barley in Ohio. Somewhere we read that it was a valuable nurse crop for meadows, and also that it was invaluable feed for farm animals. We began growing it nearly fifteen years ago, and were so well pleased with it from the beginning that we have used it almost exclusively for a nurse crop on our farm ever since our first experiment. It has short, very stiff straw and little foliage, and ripens only a little later than wheat, coming off the ground before the young meadow has begun to suffer at all. If sown as recommended it forms so little shade as to injure meadows none whatever, and as it does not stool as much as oats and very rarely lodges, it practically never smothers the young meadow under it. If cut when in milk it makes a large amount of very valuable hay greedily eaten by all kinds of stock. If cut for grain the straw may be fed with safety owing to its being beardless, and the grain is very rich, good feed. We had splendid results from it when fed to sheep. If fed to hogs it must be either soaked or ground, and should be mixed with oil meal, tankage or other feed to form a balanced ration. Sheep like it so well that it must be fed with caution until they are accustomed to it, but after this time is reached it may be fed liberally, and will give as good results as any grain with which we are familiar. Our Champion variety is the heaviest yielding variety known, and at the same time forms a very excellent nurse crop.

At present we believe there is no absolutely pure Beardless Barley on the market. Our stocks contain from 2 to 10 per cent. of beards, and sometimes 1 per cent. of oats. We have bought other stocks of barley, and never found one as pure as our own; in fact, dealers admit that most Beardless Barley would run 25 to 50 per cent. beards. In 1915 we hope to have some Beardless Barley that will be almost absolutely pure, and possibly by that time we will have pedigreed Beardless Barley grown from a plant of our own, a strain which promises to out-yield ordinary lots five bushels per acre. It should be sown at the rate of about three to five pecks per acre for nurse crop, and for grain about two bushels per acre. Sow at oat seeding time.

COMPARISON BETWEEN BEARDED AND BEARDLESS BARLEY—Beardless barley is chiefly valuable as a nurse crop; for grain it is uncertain. It usually yields from twelve to thirty bushels per acre, sometimes forty to fifty bushels. Bearded barley should yield more uniformly and at a rate of from thirty to fifty bushels per acre. South of the Ohio River, bearded barley may be sown in the fall; but north of this, we can recommend nothing but spring sowing.

WISCONSIN PEDIGREED BARLEY—This variety has been a sensation in the Northwest, sometimes outyielding all other varieties many bushels per acre. Our

stocks come from reliable sources in the Northwest, and we believe will please all who try them.

WINTER RYE—A valuable crop for soiling, green fodder, straw or grain. It is largely used by farmers to seed in the fall, and pasture early in the spring. Our stock is Northern grown, and will unquestionably give good results wherever sown.

Winter rye is also a very good nurse crop for alfalfa or clover. It should be sown in the spring at oat seeding time, about one bushel per acre. It will grow six to twelve inches tall and die. It takes the place of the weeds early in the spring, dies before the young meadow has been overshaded, and forms a mulch throughout the rest of the summer. We can recommend this plant as a nurse crop, but we do not like it so well as beardless barley. Do not use spring rye for this purpose, as it will form grain, and be no better probably than oats.

BUCKWHEAT—Our stocks are the best which we can obtain on the market. We handle on a small commission and our prices will be found to be on the market at all times.

SORGHUM—Grown both for syrup and for forage. Three to five pounds per acre is recommended for syrup. When fodder is desired, ten to fifteen pounds is the right amount of seed. When desired for hay, not less than seventy-five pounds of seed should be sown per acre. It then makes very large amounts of hay, the feeding value of which is about that of corn stover. It is dangerous to pasture sorghum, but it is said to be perfectly safe when cured into hay.

Seed Oats

We give below the eight-year average yield of twenty-one varieties of oats as tested by the Ohio Experiment Station. Note that three of the highest yields are those of the Siberian, Sixty Day and Improved American. This year we are fortunate to have moderate stocks of all three of these oats.

The Improved American Oat has given our customers satisfaction over a little wider territory than most any other variety which we have ever sold. We can recommend this oat as a splendid general purpose variety, adapting itself to various soils and conditions. It is a strong grower, rather tall, very vigorous and sturdy, and a very heavy yielder.

One hundred and seventy-five acres of our Improved American Oats on just moderately rich ground this year averaged about fifty bushels, while adjoining fields of other varieties made only thirty to forty. Ten acres of very poor soil made fifty bushels, while adjoining fields of much better soil and other varieties made less. We believe that where stiffness of straw, hardiness and large yield are desired, it is very difficult to better this oat in Ohio.

The Siberian continues to hold a very high record for this state. It has not given quite as good satisfaction in adjoining states as it has in Ohio. This oat is very hardy, and a very heavy yielder both of grain and straw. Our stocks made forty to fifty bushels on soil of just average fertility. The straw is not quite as stiff as the Improved American. In the test plot, side by side this year, there was only four pounds between the Siberian and Improved American.

The Sixty Day Oat is certainly a very valuable variety. It is giving satisfaction over a wide range of territory, is yielding right along side of any variety, is at least a week earlier, gets ahead of the rust and hot winds, and when oats must be used as a nurse crop is proving decidedly the best variety for this purpose, as it grows six inches to a foot shorter than ordinary varieties. It frequently happens that farmers can get this oat on the market ten days earlier than any other variety and get several cents per bushel higher price on this account.

We are now testing out on our Experiment Grounds many varieties of oats, selecting from the highest yielding varieties in Ohio, Michigan and adjoining states, and from the greatest oat breeders in the world. Some of these experimental varieties promise very well; one of them yielded seventy-five bushels; but we will not feel warranted in putting them on the market until we have given them one or two more years of trial.

This year we are putting our oats on the bargain counter, because we believe that these splendid varieties have not been properly appreciated by farmers in the past, and we are making the price so low that no one can afford to lose this opportunity of testing these oats.

OHIO AGRICULTURAL EXPERIMENT STATION

Experiments with Oats at Wooster, O. Nine year average yield of twenty-one varieties of oats and one variety of emmer. 1904-1912

Variety	Side or branching	Color of grain	Bushels per acre
Alaska	Branching	White	62.96
American Banner	Branching	White	67.75
Big Four	Branching	White	70.49
Clydesdale	Branching	White	61.33
Czar of Russia	Branching	White	68.02
Early Champion	Branching	White	61.37
Golden Fleece	Branching	White	62.83
Green Mountain	Branching	White	66.94
Improved American	Branching	White	69.43
Joanette	Branching	Black	67.24
Lincoln	Branching	White	67.31
Long's White Tartar	Side	White	65.16
Morgan Feller	Branching	White	65.98
Seizure	Side	Yellow	61.13
Siberian	Branching	W. & Y.	71.33
Sixty Day	Branching	Yellow	68.23

Seed Wheat

We give below the results of the Ohio Experiment Station's long time test with twenty-four varieties of seed wheat. For some years we have been especially recommending the Gypsy, and this test certainly should be convincing proof of the splendid yielding qualities of this variety. Our stocks of Gypsy are descended from wheat secured from the Experiment Station itself.

Last year we sold large amounts of Gypsy wheat, and the reports received from our customers are so enthusiastic over this breed that we feel safe in recommending it to our customers as the very best bearded variety grown in this state, enough better than the others so that in future we expect to handle this one variety alone. Gypsy wheat goes through the winter almost like rye, seeming to fairly rejoice in the cold, coming out in the spring in the very best heart possible. It has a large amount of straw, but of such splendid quality, so little given to lodging, that we can cheerfully recommend it for fertile soils, on which almost any other variety of wheat would lodge. Our own neighborhood contains as fertile soil as is in the state, and we grow this wheat with entire success on the best land which we have. The field from which we obtained our stocks in 1910 produced at the rate of twenty-seven bushels per acre of Gypsy wheat, while another variety which is usually thought well of in this section, the Goenz wheat, grown alongside of it under identical conditions, made less than twenty. Reports from our customers everywhere that we have sold this wheat indicated the best of satisfaction with it.

In 1911, one field of Gypsy wheat grown by a neighbor from our seed, yielded forty bushels per acre.

POOLE WHEAT—We are sure that Poole wheat is the best all-round smooth wheat grown in the state, and we are this year growing a field for seed purposes. Poole wheat has been giving good satisfaction for many years, and our customers will hardly need an introduction to it. Our stocks are descended from Experiment Station seed, and we are sure they will give the best of satisfaction.

OHIO AGRICULTURAL EXPERIMENT STATION

Results of Experiments with Wheat at Wooster.

Sixteen-year Average Yield of Twenty-four varieties, 1898-1913.

Variety	Bearded or bald	Color		Bushels per acre
		Grain	Chaff	
American Bronze	Bald	Red	White	27.54
Buda Pesth	Bearded	Red	White	29.37
Dawson's Golden Chaff	Bald	White	Red	31.28
Deitz	Bearded	Red	White	29.41
Early Red Clawson	Bald	Red	Red	28.74
Early Ripe	Bald	Red	Red	29.55
Fulcaster	Bearded	Red	White	29.02
Fultz	Bald	Red	White	28.37
Fultzo-Mediterranean	Bald	Red	White	28.47
Gold Coin	Bald	White	Red	29.49
Gypsy	Bearded	Red	White	30.76
Harvest King	Bald	Red	Red	30.13
Hickman	Bald	Red	White	29.17
Mealy	Bald	Red	White	30.40
Mediterranean	Bearded	Red	Red	29.33
Nigger	Bearded	Red	White	30.84
Poole	Bald	Red	Red	30.61

Canada Field Peas

This plant should rightfully assume greater importance than it has at present. Many of our best farmers know and understand this, but very many do not. It is used both as green feed and as fertilizer; and in both places it deserves to occupy a very prominent position. As green feed sown with oats or barley early in the spring, it fills a place which no other plant we have can occupy. The amount of feed produced on an acre is very large. It comes before any other good nutritious feed suitable for hay or soiling. It is greedily eaten by practically all kinds of stock, and is as nourishing as can be desired. As a fertilizer, either when plowed under or pastured off, it will rank very high. Some of our very best farmers sow each year a field which they wish to enrich to Canada peas and oats, hogging off the crop or depasturing with cattle or sheep, and they say that they can tell the line right to the foot where these peas grew, when they plow the field up and put in another crop. We would earnestly urge our customers to use these peas more liberally than many of them have been doing in the past, knowing that they will be very well pleased with the result.

Canada peas are cold weather plants, and the earlier they are seeded, the better they will do. Many of our customers seed in March, most of them, however, the first of April. If the season is cold, they may be sown later than this, but always get them in as early as possible.

The very best results would probably be obtained by seeding the oats and peas as deep as you would dare to without causing the oats to rot. Sow a bushel of Canada peas and a bushel of oats per acre. If it is desired to sow rape with them, sow five pounds of rape. If you wish to sow winter vetch with them, use forty pounds of it; if spring vetch, sow sixty pounds. All these combinations will give good results.

Cow Peas

These have a dual purpose, and wherever they are needed they are indispensable to the successful farming of the country. They will grow on soil so poor or impoverished that it is nearly impossible to grow any other farm crop. If one or two crops of them are grown and turned under for fertilizer, this same soil will then produce fair crops of every sort. In the South they are very extensively grown also for hay, being called the "clover" of the South. They are legumes, and gather nitrogen from the air to add to the soil. We strongly recommend growing a crop of these preparatory to attempting alfalfa, even on moderately fertile land. Sow in May or June, or after corn planting, from one-half to one bushel per acre, if drilled; about two bushels per acre if broadcasted.

True Dwarf Essex Rape

This is a plant which is coming into such prominence that description or recommendation is really unnecessary. It is of the cabbage family, and in feeding the same results may be expected as would be from feeding cabbage, but at a fraction of the cost of growing. Nearly all shepherds who exhibit at fairs expect to make a large part of their gains from this plant. It produces an enormous amount of forage per acre, which may be fed with absolute safety to sheep, hogs or cattle. At the Michigan Experiment Station 128 lambs pastured on 15 acres of rape showed a total gain of 2,890 pounds during 8 weeks, which is 3 pounds per lamb per week. Our seed is the True Dwarf Essex, and not the worthless annual. Sow 4 pounds per acre broadcast, or 2 to 3 pounds if in drills.

Millets

JAPANESE MILLET—A tall growing and enormous yielding variety. It is sometimes 6 to 8 feet high. Does not lodge and sometimes yields from 10 to 12 tons of green fodder per acre. When properly cured it makes excellent hay. It is recommended that this variety be sown on good rich soil, and only in the Northern states, as it does not thrive south of the Ohio River. If sown early in May and cut when in bloom it will produce a fair second cutting. May be sown from the middle of May to the first of July. Broadcast, 15 pounds per acre, but it is better to sow in drills, 12 to 14 inches apart, using 10 to 12 pounds per acre, and hoeing between the rows to keep down the weeds until the plant is a foot high or over, after which time it will smother all weeds out itself.

HUNGARIAN MILLET—It is the quickest maturing of any variety of millet. May be sown any time during the summer up to the middle of August, thus being very valuable to substitute where another crop has failed. Sow about 48 pounds per acre.

GERMAN OR GOLDEN MILLET—Tennessee Grown—This stock is much preferred to the same seed Western-grown. Will grow in any climate or soil, and make a large yield of nutritious feed. Should be sown at the rate of 50 pounds or over per acre, any time between May 1st and June 15th; cover lightly. Cut in bloom before the seed hardens.

Hungarian millet is the quickest maturing, German next, and Japanese last. Hungarian has the finest stalks, German next, Japanese the coarsest. Probably the German and Jap would yield a little more forage than the Hungarian, but not of quite such good quality.

Analysis of American Feeding Stuffs

FRESH OR AIR DRY SUBSTANCE

	Water %	Protein %	Fat %	Carbo-Hydrates %	Fiber %	Ash %
HAY and DRY, COARSE FODDER						
Legumes						
Alfalfa, 1	8.4	14.3	2.2	42.7	25.0	7.4
Clover, medium, 1	20.8	12.4	4.5	33.8	21.9	6.6
Soy Beans, average, 1	11.3	15.4	5.2	38.6	22.3	7.2
Soy Bean Straw, 2	10.1	4.6	1.7	37.4	40.4	5.8
Cow pea, 1	10.7	16.6	2.9	42.2	20.1	7.5
Vetches, 1	11.3	17.0	2.3	36.1	25.4	7.9
Grains and Seeds						
Beans, Soy, 4	7.7	35.4	20.3	26.1	4.6	5.7
Cow peas, 1	11.9	23.5	1.7	55.7	3.8	3.4
Corn, 1	10.9	10.5	5.4	69.6	2.1	1.5
Oats, 1	11.0	11.8	5.0	59.7	9.5	3.0
Waste Products						
Wheat bran, 1	11.9	15.4	4.0	53.9	9.0	5.8
Linseed oil meal, old process, 1	9.2	32.9	7.9	35.4	8.9	5.7
Cottonseed meal, 1	8.2	42.3	13.1	23.6	5.6	7.2

1—U. S. Department of Agriculture, Farmers' Bulletin 22.
2—Feeds and Feeding—Henry.
4—U. S. Department of Agriculture, Farmers' Bulletin 372.

SPECIAL ADVICE—Our Mr. Joseph E. Wing has spent the greater part of his life in traveling, studying soils and plants under almost all conditions, not only in every state in the Union, but in foreign countries as well. He is familiar with the work that has been done at nearly all the Experiment Stations as well as that which has been done at Washington, and he certainly has had every opportunity to learn the whole agriculture scheme. Most of the year his time is fully occupied, but sometimes it is possible for him to make special trips to study conditions, give advice as to soil requirements, or suggest plantings of meadows and pastures. When his time permits, he is willing to do this for a reasonable compensation. As he has many requests for his time such visits can seldom be arranged without previous correspondence and due notice.

Our Mr. Charles B. Wing, besides being a seed expert, has had wide experience in rebuilding worn soils, and in growing legumes (including Alfalfa) on both fertile and worn soils. His time is quite fully occupied, but he can take a few engagements, either for lectures or to visit farms and give advice.

LIST OF LIME MANUFACTURERS

*The Security Cement & Lime Co., Baltimore, Washington, Pittsburg; Main Offices, Hagerstown, Maryland.
*The France Co., Ohio Bldg., Toledo, Ohio.
*The Kelley Island Lime & Transport Co., Cleveland, Ohio.
The National Lime & Stone Ct., Carey, O. Hydrated and Agricultural Lime.
*The Scioto Lime & Stone Co., Delaware, Ohio.
*The White Sulphur Stone Co., Marion, O. Works at White Sulphur, Ohio.
*The Charles Warner Co., Philadelphia, New York, Boston; Executive Offices, Wilmington, Del.
*The Fischer Lime & Cement Co., Memphis, Tenn.
*The Ditlinger Lime Co., New Braunfels, Texas. Also manufacture Hydrate and Fertilizer Lime.
Le Roy Lime Works & Stone Quarries, Le Roy, N. Y. Manufacturers of Agricultural Lime.
*Handle Ground Limestone Rock.

PRICE LIST OF BOOKS

We are agents for books and circulars on Alfalfa and Soil.

ALFALFA IN AMERICA—By Joseph E. Wing, 480 pages, cloth. Price $2.00 postpaid. The most comprehensive, practical and valuable work on Alfalfa ever written. The writer has had much experience with the plant, growing it on his own farm and observing it in every state in which it can be grown. The book treats of the history, varieties and habits of Alfalfa, describes the conditions required by the plant and how to produce them where they do not exist naturally, tells how to prepare the soil, how to sow, care for and harvest the plant, the proper tools to use, how to erect suitable buildings for storing the hay. It describes the enemies of Alfalfa and how to combat them and discusses the soil in its relation to Alfalfa, its different constituents, and what fertilizers to use.

MEADOWS AND PASTURES—By Joseph E. Wing, 418 pages, cloth. Price $1.50 postpaid. Describes the best methods of making and maintaining meadows and pastures. Contains full descriptions and illustrations of all the agricultural grasses, with directions for planting and caring for them when established. Profusely illustrated and beautifully printed.

IN FOREIGN FIELDS—By Joseph E. Wing, 549 pages, cloth. Price $1.50 postpaid. In 1911 Mr. Wing was sent over a large amount of South American territory to collect wool statistics for the Tariff Board. "In Foreign Fields" gives in entertaining form the varied experiences which he had while on this trip, and also useful comment upon farm conditions as compared with our own.

FEEDS AND FEEDING—By W. A. Henry, 613 pages, cloth. New edition just out. Price $2.25 postpaid. This book is a cyclopedia of animal nutrition and rational feeding of farm animals. It shows how plants grow and elaborate food for animals, the functions of different nutrients, the production of flesh, fat and energy, how to calculate rations for farm animals. It gives the food values of the different feeding stuffs, the grains and grasses, mill and factory by-products. It sets forth the results of the tests of American and European Experiment Stations in feeding farm animals. In this connection a great many tables are given, showing the amount of food consumed in one day by the animals in the test, the product of the day's food in work, flesh, energy, etc. It is cross-indexed in such a manner that any fact stated in the text may be readily found. This book should be in the libarry of every up-to-date farmer.

ALFALFA—By F. D. Coburn, 400 pages, cloth. Price $2.00 postpaid. This is a standard work on Alfalfa growing by a well-known authority; a very valuable book. It covers the ground thoroughly, discussing at length the plant, its culture and uses.

ALFALFA—By F. D. Coburn, 160 pages, cloth. Price 50 cts. postpaid. This book covers the same ground as the larger one by the same author, but in a condensed form.

SOIL FERTILITY AND PERMANENT AGRICULTURE—By C. G. Hopkins, 653 pages, cloth. Price $2.70 postpaid. If there is anything you want to know about feeding, consult "Feeds and Feeding" above. If there is anything you want to know about soils, consult this book. It is the most scientific and complete and at the same time easily understood book on soil fertility that we have ever seen. It tells what soils are composed of, what foods plants require, the effect upon soils of different fertilizers, different plants, and different rotations, and clearly explains why these things are so. It gives very complete tables bearing upon all important points in connection with soil fertility, these tables drawn from the oldest experiments in the world as well as all recent experiments, and is so tabulated and compiled that a busy man can ascertain anything he wants to know in the minimum amount of time.

THE STORY OF THE SOIL—By C. G. Hopkins, 350 pages, cloth. Price $1.62 postpaid. Dr. Hopkins, in giving us this book, has done inestimable good to permanent agriculture. This book gives simply, clearly, and with remarkable logic, fundamental principles, and theories which must be understood and applied to every soil in the country. It covers the entire ground, giving full scientific reasons for every deduction, but giving them in such a clear and easily comprehended form, that anyone can understand it. We advise every farmer who has the least intention of maintaining his soil's fertility to buy this book and read it. It is in narrative form, and the story itself would carry one along with it, even without the remarkable teachings contained in it.

THE BOOK OF VETCH—By Wm. C. Smith, 157 pages, cloth. Price $1.25 postpaid. All we need to say about this book is, that taken in connection with our own modest article in this catalogue, it contains practically all that is known about the vetches today. The writer has had large experience with this plant, and values it as highly as we do ourselves.

We would also recommend to every one who is interested in growing Alfalfa to write to the Ohio Agricultural Station at Wooster, Ohio, for their Bulletin No. 181, on Alfalfa.

The Kansas Experiment Station at Manhattan, Kansas, has a very valuable bulletin on Alfalfa. Write them for Bulletin 155.

Wing's Vegetable and Flower Seeds

For Your 1914 Garden

Although only a few years old, this department of our business is serving the needs of our customers in a pleasing and competent fashion. We are improving our facilities in every way and are prepared better than ever to take care of your garden seed orders.

The vegetable list has again been thoroughly revised. A dozen new sorts of proven merit have been added and some old sorts of poor quality have been dropped. For the first time this year, we offer a complete "Dollar Collection"—a departure that is intended to make ordering easy for those who do not know what to choose for the home garden.

More space has been given to flower seeds in response to constant urging from many customers. We now offer the most popular annuals in cultivation. Help us to make this department a success by ordering liberally.

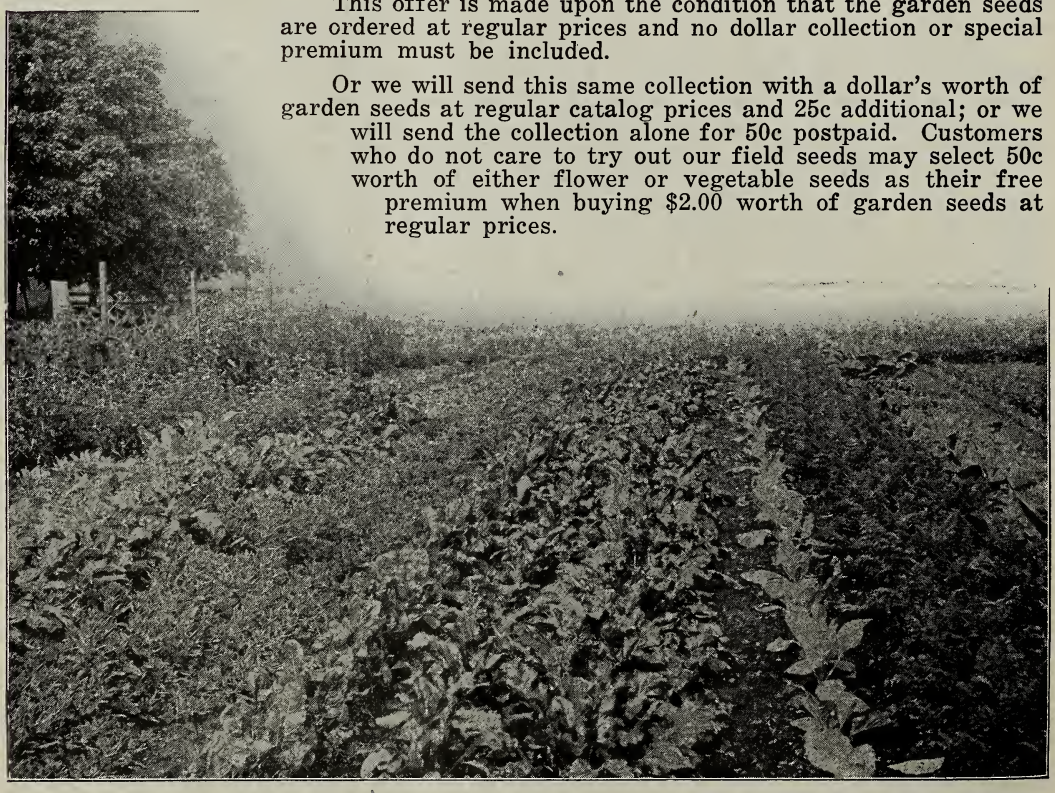
Wing's Special Premium Offer for 1914

We are very anxious to acquaint those of our customers who order garden seeds only with the high quality of our field seeds. We will gladly send, therefore, as a special free premium with each $2.00 order for vegetable or flower seeds 1 oz. each of the following field seeds:

Alfalfa.
Each variety of our Soy Beans.
Each variety of our Seed Corn.
Winter Vetch.
Bromus Inermis.
Tall Meadow Oats.
Meadow Fescue.

This offer is made upon the condition that the garden seeds are ordered at regular prices and no dollar collection or special premium must be included.

Or we will send this same collection with a dollar's worth of garden seeds at regular catalog prices and 25c additional; or we will send the collection alone for 50c postpaid. Customers who do not care to try out our field seeds may select 50c worth of either flower or vegetable seeds as their free premium when buying $2.00 worth of garden seeds at regular prices.



Wing's Great

Home Garden Vegetable Collection

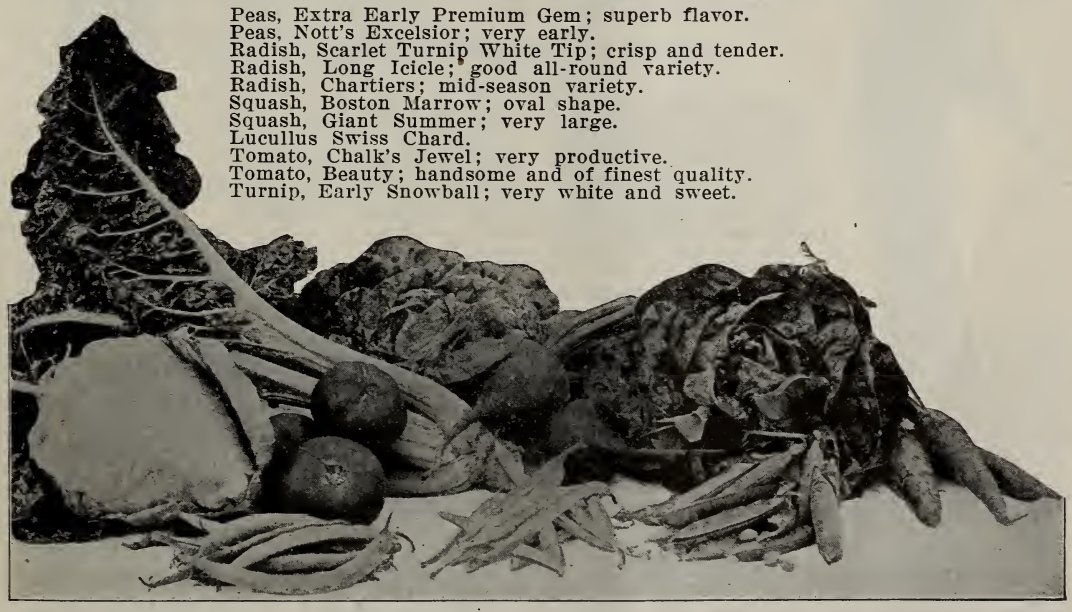
32 Large Packets of Selected Sorts for $1.00

As already stated in the introduction on preceding page, this collection is gotten up for the special benefit of those who are at a loss to know what to order for their vegetable garden. We have tried to make this collection just as practical for all purposes as it can be made. Of those things which require several plantings to make them good throughout the season, we have given several packets of several varieties. Of others, for which there is not quite so much use, we have included only one variety.

You will find Wing's new $1.00 collection a most unusual bargain for the price. Since it is almost a premium in itself, no special premium offer can be taken advantage of in connection with this $1.00 collection. We are sure that the various varieties included will give thorough satisfaction in every home garden. They are the leaders throughout the country and are valued everywhere for their high quality. Here is what we will send you: One packet each of—

Dollar Collection

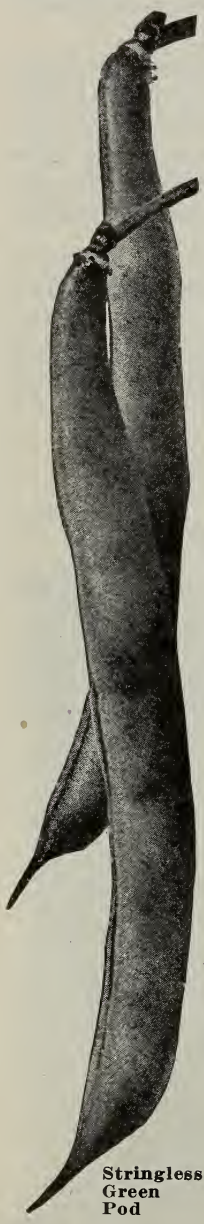
Beans, Round Pod Kidney Wax, Extra Early Sort.
Beans, Stringless Green Pod, always reliable.
Beets, Eclipse, one of the best for market.
Cabbage, Early Jersey Wakefield; early sort of excellent flavor.
Cabbage, Henderson Early Summer; round, compact heads.
Celery, White Plume; fine early kind.
Cucumber, Davis Perfect; splendid for slicing.
Cucumber, White Spine; handsome shape, of finest quality.
Corn, Sweet, Kendell's Giant; a very early kind.
Corn, Sweet, Golden Bantam; sweetest of all.
Lettuce, Grand Rapids; splendid shipper.
Lettuce, May King; excellent butter head.
Lettuce, Hanson; best early summer sort.
Water Melon, Tom Watson; uniform shape and superb quality.
Musk Melon, Burrel Gem; fine for shipping.
Musk Melon, Burpee's Netted Gem; very early.
Onions, Yellow Globe Danvers; good grower.
Onions, Prizetaker; largest and of mild flavor.
Parsnips, Guernsey; larger than Hollow Crown.
Parsley, Fine Double Curled; dwarf variety.
Peppers, Ruby King; mild flavor.
Peas, Extra Early Premium Gem; superb flavor.
Peas, Nott's Excelsior; very early.
Radish, Scarlet Turnip White Tip; crisp and tender.
Radish, Long Icicle; good all-round variety.
Radish, Chartiers; mid-season variety.
Squash, Boston Marrow; oval shape.
Squash, Giant Summer; very large.
Lucullus Swiss Chard.
Tomato, Chalk's Jewel; very productive.
Tomato, Beauty; handsome and of finest quality.
Turnip, Early Snowball; very white and sweet.



Garden Seeds

We are handling our Garden Seeds with the same care that has made our Field Seeds famous.

Prices quoted are postpaid on packets, pints and quarts; on half-pecks or over, by express or freight, buyer pays transportation charges. If pints and quarts are sent by freight at buyer's expense, deduct 8c from pint prices and 15c from quart prices.



Stringless Green Pod

Beans

DWARF OR BUSH BEANS

1 Qt. to 100 ft. in drills. 2 Bu. per acre in drills.

Culture—Succession of sowings may be made from first of May until September in latitude of New York, earlier south of this and later north. Sow in drills about 2 inches deep, and from 2 to 3 feet apart.

WAX PODDED SORTS

(See Illustration.) Burpee's New Kidney Wax Bean. Considered by many market gardeners to be superior to Wardwell's Kidney Wax in every respect. Flat, meaty pods of unsurpassed quality, often grow from six to seven inches in length. Are borne in large clusters. They are entirely free of strings and are exceedingly popular on account of their rich lemon-yellow color. Plants are blight resisting, sturdy and bear loads of beautiful pods well above the ground. Very prolific.
Pkt., 10c; Pt., 30c; Qt., 50c; ½ Pk., $1.25; Pk., $2.25.

Golden Wax—Well known and popular standard kind.
Pkt., 10c; Pt., 30c; Qt., 50c; ½ Pk., $1.00; Pk., $1.50.

Wardwell's Kidney Wax—Extra early, free from rust, long, flat waxy pods.
Pkt., 10c; Pt., 30c; Qt., 50c; ½ Pk., $1.00; Pk., $1.60.

ROUND POD KIDNEY WAX

An extra early sort. Has handsome, round, stringless and brittle pods, averaging six inches long. A vigorous grower of great productiveness.
Pkt., 10c; Pt., 30c; Qt., 50c; ½ Pk., $1.00; Pk., $1.60.

DAVIS KIDNEY WAX

One of the finest early wax beans, and the best market garden wax bean. Vigorous and extremely prolific. The dry beans are excellent for baking. For snap beans must be picked young, as they tend to become stringy and tough as they advance.
Pkt., 10c; Pt., 25c; Qt., 50c; ½ Pk., 85c; Pk., $1.50.

GREEN PODDED BUSH BEANS

BOUNTIFUL

A prolific bearer and very early sort. Has beautiful, flat, green pods; tender, very meaty and of excellent quality. Splendid market variety.
Pkt., 10c; Pt., 25c; Qt., 45c; ½ Pk., 90c; Pk., $1.50.

Burpee's Stringless Green Pod (See Illustration)—Extra early, stringless, crisp, tender, and of excellent quality.
Pkt., 10c; Pt., 25c; Qt., 45c; ½ Pk., $1.00; Pk., $1.60.

Early Red Valentine—Very early snap variety. One of the most popular round pod beans.
Pkt., 10c; Pt., 25c; Qt., 40c; ½ Pk., 80c; Pk., $1.25

IMPROVED WHITE KIDNEY

One of the best white beans for shelling purposes.
Pkt., 5c; Pt., 25c; Qt., 40c; ½ Pk., 75c; Pk., $1.10.

IMPROVED RED KIDNEY

Used the same as the Improved Red Kidney.
Pkt., 5c; Pt., 25c; Qt., 40c; ½ Pk., 75c; Pk., $1.10.

BOSTON SMALL PEA BEAN

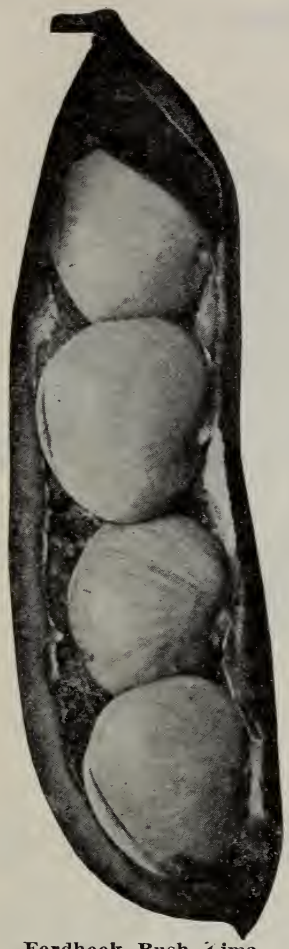
Small, white bean for field culture. Very productive.
Pkt., 5c; Pt., 25c; Qt., 40c; ½ Pk., 65c; Pk., $1.10.

Stringless Green Pod

LIMA BEANS

BURPEE'S BUSH LIMA—A very valuable variety. Beans very large, fully equal in flavor to the Large Pole Limas, bushes from 18 to 20 inches high. Plants erect, sturdy and branching, immense yielders, each bearing 50 to 100 large, well-filled pods. **Pkt., 10c; Pt., 30c; Qt., 50c; ½ Pk., $1.00; Pk., $1.75.**

Henderson's Bush Lima—Very early, and extremely productive. Beans smaller than Burpee's. **Pkt., 10c; Pt., 25c; Qt., 45c; ½ Pk., $1.00; Pk., $1.75.**



Fordhook Bush Lima

FORDHOOK BUSH LIMA (See Illustration)

An exceedingly prolific variety of the Bush Lima family and a remarkable seller. The branches are of a stiff erect growth bearing enormous clusters of from four to eight pods. Beans are very plump, and retain their delightful dark green color much longer than Burpee's Bush Lima. **Pkt., 10c; Pt., 35c; Qt., 60c; ½ Pk., $1.35; Pk., $2.25.**

POLE OR RUNNING BEANS

1 Qt. to 150 Hills; 10 to 12 Qts. per Acre in Drills

Culture—The pole varieties are more tender than the bush varieties and should not be planted so early. After weather is warm and settled, set poles in rows 4 feet apart, the poles being 3 feet apart in the rows. Plant 5 or 6 beans around each stalk, thin to 4 plants.

Dreer's Golden Cluster Wax—Early and productive. Golden yellow pods 6 to 8 inches long, white seeds. **Pkt., 15c; Pt., 40c; Qt., 75c; ½ Pk., $1.60; Pk., $2.75.**

Kentucky Wonder—Early and productive. Absolutely stringless green pods. **Pkt., 10c; Pt., 30c; Qt., 50c; ½ Pk., $1.00; Pk., $1.75.**

Lazy Wife's—An enormous yielder. Green, quite stringless pods, white seed. **Pkt., 10c; Pt., 25c; Qt., 50c; ½ Pk., $1.00; Pk., $1.75.**

LEVIATHAN POLE LIMA

The very earliest of the pole Limas. Plants are of sturdy growth, cling well to the pole, and are very productive throughout the season. Long, straight pods are borne in clusters often containing from three to five large, delicious beans to the pod. Superb flavor. **Pkt., 10c; Pt., 30c; Qt., 55c; ½ Pk., $1.00; Pk., $1.75.**

Large White Lima—(Extra Size)—Extra large variety of the standard Limas. Beans very large. Selected stock. **Pkt., 10c; Pt., 25c; Qt., 45c; ½ Pk., 90c; Pk., $1.65.**

Pole Lima Bean

Beets

1 Oz. to 50 Ft. Drill; 5 to 6 Lbs. to the Acre in Drills.

Culture—For early vegetables sow in spring as soon as the ground can be worked, in drills about 1 foot apart and 2 inches deep. For main crop sow first week in May; for winter, sow in June.

Crosby's Egyptian—Best for early market supply. As early and hardy as the original Egyptians, but of better quality, although not so well adapted for forcing in hot-beds and for transplanting. **Pkt., 5c; Oz., 10c; ¼ Lb., 30c; Lb., $1.00.**

Detroit Dark Red—One of the best for market gardeners and for home use. Excellent for canning. Round, dark red skin, dark red, very sweet flesh. **Pkt., 5c; Oz., 15c; ¼ Lb., 35c; Lb., $1.25.**

Improved Early Blood Turnip—One of the best and most popular early kinds. Smooth and dark red; fine quality. **Pkt., 5c; Oz., 10c; ¼ Lb., 25c; Lb., 85c.**

Eclipse Blood Turnip — Very early, smooth, round dark red, with very small top. One of the best for the market. **Pkt., 5c; Oz., 10c; ¼ Lb., 25c; Lb., 85c.**

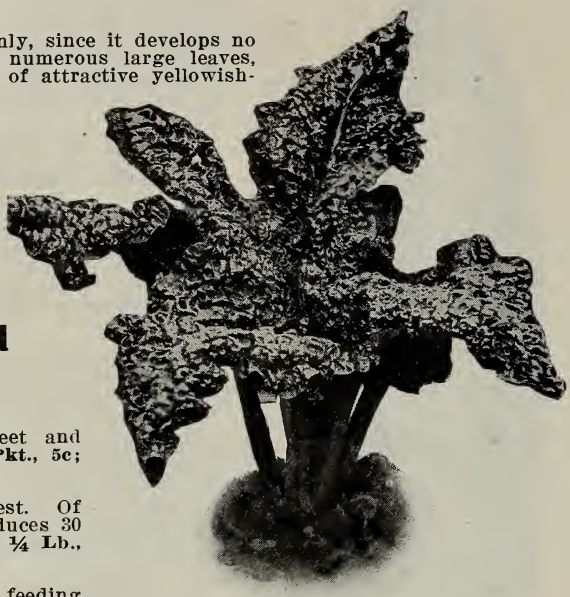
Half Long Blood—Fine, half-long, second early sort; good for winter use. **Pkt., 5c; Oz., 10c; ¼ Lb., 20c; Lb., 65c.**

New Swiss Chard, Lucullus

(See Illustration)

This type of beet is grown for its foilage only, since it develops no beet roots. The plants which consist of numerous large leaves, grow from 2 to 2½ feet tall. Leaves are of attractive yellowish-green color, attractively curled and have a strong, yellow mid-rib.

The leafy portion of the plant is used like spinach greens; the strong ribs of leaves are boiled and served with a dressing like asparagus. Plants grows continually all summer if care is taken not to cut the heart. Fine home gardens. **Pkt., 5c; Oz., 15c; ¼ Lb., 35c; Lb., $1.00.**



New Swiss Chard, Lucullus

Mangel Wurzel and Sugar Beets

Golden Tankard—Bright yellow, large, sweet and productive. Fine for sheep and cattle. **Pkt., 5c; Oz., 10c; ¼ Lb., 20c; Lb., 50c.**

Mammoth Prize Long Red—One of the best. Of enormous size and excellent quality. Produces 30 to 50 tons to the acre. **Pkt., 5c; Oz., 10c; ¼ Lb., 20c; Lb., 50c.**

Sugar Giant Feeding—Said to be the best feeding variety. Roots of very high nutritive value. **Pkt., 5c; Oz., 10c; ¼ Lb., 20c; Lb., 50c.**

Cabbage

Culture—For early spring use sow in fall, not too early, and winter in cold frames. For late or winter crops sow in May, and set out the plants in July. These succeed best on rich, heavy loam.

Select Early Jersey Wakefield (See Illustration Below)—Very best early cabbage. Very large, conical head, compact and solid, fine texture, sweet and excellent flavor. An excellent kind to winter over in cold frames. Our seed is imported, of extra fine quality. **Pkt., 5c; Oz., 25c; ¼ Lb., 75c.**

Large Charleston Wakefield — About a week later than the Early Jersey Wakefield, with heads fully as solid, but much larger. Popular with market gardeners. Will not burst, and can be left standing in the field. **Pkt., 5c; Oz., 25c; ¼ Lb., 60c.**

Glory of Enkhousen (See Illustration)—A very desirable early variety from Holland. Very large, solid, round heads of excellent flavor. A fine keeper. Very dwarf and compact, allowing of close planting. Quite uniform, and ideal for marketing.
Pkt., 5c; Oz., 35c; ¼ Lb., $1.00.

Henderson Early Summer (See Illustration)—Large, early sort, with very compact round heads. About ten days later than Jersey Wakefield. **Pkt., 5c; Oz., 25c; ¼ Lb., 60c.**

Cabbage—Continued

Late Fall and Winter Varieties

Danish Ballhead

(See Illustration)

One of the most popular varieties among the late cabbages. Produces large, smooth heads of great solidity with superb quality. This splendid sort is especially noted for its grand keeping qualities and heavy weight, which makes it valuable for shipping to markets where cabbage is sold by weight.
Pkt. 5c; Oz., 30c; ¼ Lb., 85c.

All Seasons—Very deep heads. Can be planted early for early or late crop. Excellent keeper. About as early as Early Summer, but with larger leaves.
Pkt., 5c; Oz., 25c; ¼ Lb., 75c.

Henderson's Succession — One of the best. Very large, somewhat flat heads; about ten days earlier than Early Summer. Excellent kind for gardeners.
Pkt., 5c; Oz., 35c; ¼ Lb., $1.00.

Large Late Drumhead — Large headed, very fine fall and winter kind.
Pkt., 5c; Oz., 20c; ¼ Lb., 50c.

Premium Late Flat Dutch—One of the best. An excellent popular variety, much prized for market garden and family use.
Pkt., 5c; Oz., 30c; ¼ Lb., 85c.

Danish Ballhead

Burpee's Surehead—Best late cabbage. Reliable header, with few loose leaves. Excellent keeper and shipper. Fine market variety.
Pkt., 5c; Oz., 25c; ¼ Lb., 80c.

Carrots

1 Ounce Will Sow 100 Feet of Drill;
3 Pounds Will Sow 1 Acre.

Culture—For gardens sow in drills about 18 inches apart. For field culture sow in drills from 3 to 3½ feet apart, so as to cultivate with horse. Soil should be good, light, well manured sandy loam, finely pulverized.

Chantenay

(See Illustration)

A stump-root sort of great uniformity. Has gained great popularity among gardeners throughout the country. Has deep orange red flesh of superior quality.
Pkt., 5c; Oz., 20c; ¼ Lb., 50c.

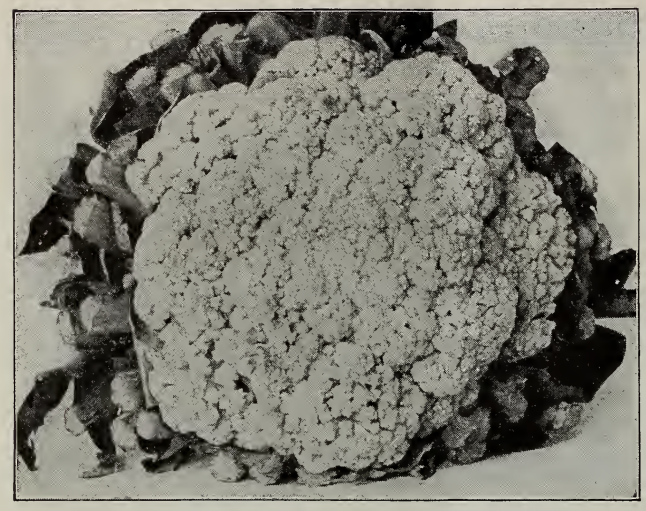
Danver's Half Long—One of the heaviest yielders, although the roots are shorter than some other varieties. Adapted to all classes of soils. Roots dark orange, 8 to 10 inches long, easy to harvest. First class kind, largely grown. **Pkt., 5c; Oz., 15c; ¼ Lb., 50c.**

Improved Long Orange—The most popular and largely grown kind in cultivation. Fine for stock or table use. Roots dark orange, 12 to 15 inches long. **Pkt., 5c; Oz., 15c; ¼ Lb., 45c.**

Oxheart—Short, thick roots, easy to harvest. Color, dark orange, sweet and fine in texture. Can be grown in hard stiff soil where longer kinds will not thrive.
Pkt., 5c; Oz., 15c; ¼ Lb., 35c.

White Belgian—Used for stock feeding: an enormous yielder. **Pkt., 5c; Oz., 10c; ¼ Lb., 20c; Lb., 65c.**

Chatenay Carrots



Henderson's Early Snowball

Cauliflower

1 Ounce Will Produce 3,000 Plants

Culture—It requires a deep, rich soil, with plenty of moisture, which in very dry weather must be applied artificially. Cultivate as you would cabbage. For early fall crops, sow in May, and transplant in June, setting the plants 2 feet apart in rows 4 feet apart. Hoe frequently and feed with liberal applications of liquid manure, so that the plants will keep up a rapid, continuous growth. To facilitate bleaching, gather the leaves loosely together, and tie over the top of the head to protect from the sun. Cut before flowers begin to open. The seed may be sown as late as June 20th for late crops, in beds or hills, covering ½-inch deep.

Henderson's Early Snowball — Finest and earliest variety grown. Snow white heads of finest flavor.

Pkt., 25c; ¼ Oz., 75c; ½ Oz., $1.40; Oz., $2.50.

Celery

One Ounce Will Produce 7,000 Plants.

Culture—Sow seeds in hot bed or cold frame. Transplant when the plants are 3 inches high, setting 4 to 5 inches apart. Set in the trenches when the plants are 8 inches high. Bank up a little during the summer, taking care to keep the stalks close together, so as to prevent the soil from getting between them. Finish earthing up in autumn. Never hoe or bank up in moist weather, or when the plants have dew on them. The trenches must have good drainage.

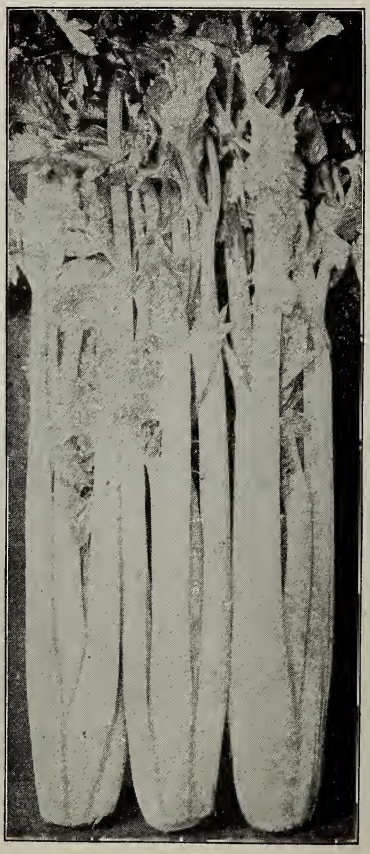
Golden Self-Blanching

(See Illustration)

Best early sort. Very solid, of finest flavor, good size, very crisp, tender and free from strings. A golden yellow color when bleached. **Pkt., 15c; ½ Oz., $1.00; Oz., $1.50.**

White Plume—Well known and popular variety. Very early, ornamental, finest quality. Splendid early market sort. **Pkt., 5c; Oz., 25c; ¼ Lb., 60c.**

Giant Pascal—Largest variety grown. One of the best for fall and winter use. Blanches to a yellowish white, and has very fine nutty flavor. Much prized in the South. **Pkt., 5c; Oz., 25c; ¼ Lb., 75c.**



Golden Self-Branching

Corn, Sweet or Sugar

Culture—For early supply begin planting early kinds about May 1st, and for continuous supply, make plantings at intervals of two weeks until the last of July, planting early kinds first, and following with later sorts. Plant in rows three feet apart with hills three feet apart in the rows. Plant 5 kernels to the hill and thin to 3 plants. Cover about an inch for early and a little deeper for late varieties. **1 Qt. to 200 Hills; 1 Pk. to the Acre in Hills.**

Extra Early Varieties

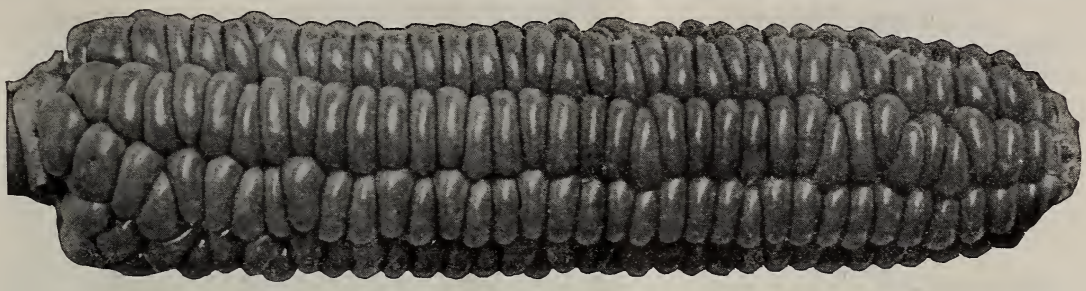
Golden Bantam **(See Illustration on next page.)** Extra early and unquestionably the sweetest corn we know. Ears average 6 to 7 inches long. It is a very hardy sort, on which account it may be planted very early. **Pkt., 10c; Pt., 25c; Qt., 40c; Pk., $1.25.**

Adams Extra Early—Not a sugar corn, but very early, and largely used for table corn, especially in the South. **Pkt., 5c; Pt., 20c; Qt., 35c; Pk., $1.00.**

Kendel's Giant—Extremely early and very large. Quality good. **Pkt., 5c; Pt., 25c; Qt., 40c; Pk., $1.10.**

Early White Cory—One of the very best early kinds. Very large. **Pkt., 5c; Pt., 20c; Qt., 35c; Pk., $1.00.**

Peep O'Day—A new variety, very sweet, and a good yielder. **Pkt., 10c; Pt., 25c; Qt., 40c; Pk., $1.10.**



Medium Early and Late Varieties of Corn

Early Evergreen—An excellent kind. Ten days earlier than Stowell's Evergreen, and its equal in quality.
Pkt., 5c; Pt., 25c; Qt., 40c; Pt., $1.10.

Black Mexican—One of the sweetest and best. Grains are black when ripe, but when in table condition cook very light.
Pkt., 5c; Pt., 25c; Qt., 45c; Pk., $1.25.

Country Gentlemen—One of the best. Small cob, densely covered with deep irregular grains. Excellent quality.
Pkt., 5c; Pt., 25c; Qt., 40c; Pk., $1.00.

Stowell's Evergreen—The standard main crop variety. Hardy and productive, tender and sweet, remaining in condition for boiling for long time. Prized by canners and market men. **Pkt., 5c; Pt., 20c; Qt., 35c; Pk., $1.00; Bu., $3.75.**

Corn, Pop

Queen's Golden—Pkt., 5c; ¼ Lb., 10c; Lb., 30c. **White Rice—Pkt., 5c; ¼ Lb., 10c; Lb., 30c.**

Cucumber

Culture—For early supply sow in hot bed or greenhouse during February or March, in soil about 90 degrees. Cover half an inch and transplant to hills in the greenhouse. Move to open ground when weather permits. For main supply, plant in open about the first of June, in hills 3 feet apart each way, leaving 3 plants to a hill.

1 Oz. Will Plant 50 Hills; 1 Lb. an Acre.

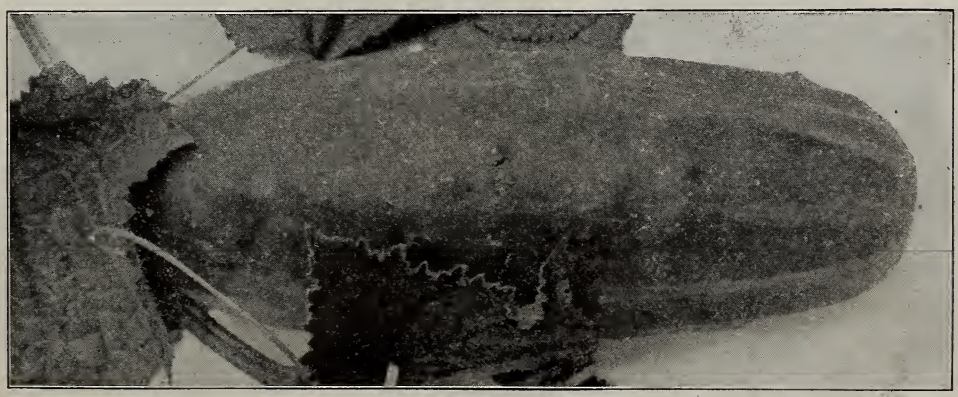
Early Frame or Short Green—Very early, vigorous and productive. Fruit medium, good for picking and slicing.
Pkt., 5c; Oz., 15c; ¼ Lb., 30c.

Davis Perfect—New, dark green white spine.
Pkt., 5c; Oz., 15c; ¼ Lb., 40c.

Improved Long Green—Fine for picking, when small. Excellent for table use.
Pkt., 5c; Oz., 15c; ¼ Lb., 30c.

Westerfield or Chicago Pickle—Favorite with market gardens and pickle manufacturers. Very prolific. Fruit medium, dark green, fine shape.
Pkt., 5c; Oz., 15c; ¼ Lb., 30c.

White Spine (See Illustration)—One of the very best pickling cucumbers. Excellent for table use, very prolific, handsome shape, finest quality.
Pkt., 5c; Oz., 15c; ¼ Lb., 40c.



White Spine

Egg Plant

Culture—Sow in hot bed or warm greenhouse in March or April. When plants have formed two character leaves transplant two or three inches apart or to 2-inch pots. About June 1st, or when danger from cold nights is past, transplant to open ground, setting 2½ feet apart. **1 Oz. will produce 1,000 plants.**

New York Improved Purple—The leading variety. Excellent in size, quality and productiveness. **Pkt., 10c; Oz., 30c.**

Endive

Culture—For early supply sow in April, and for main supply in June and July.

Broad Leaved Batavian — Large heads, broad thick leaves. Used for flavoring. The inner leaves may be used for salad if blanched. **Pkt., 5c; Oz., 15c.**

Green Curled Winter—The hardiest. Dark green leaves, easily blanched. Excellent for salad. Useful for garnishing. **Pkt., 5c; Oz., 15c.**

Gourds

1 Ounce Will Plant 25 Hills.

Culture—Do not plant until danger from frost is over. Plant 6 feet apart each way in rich soil, and leave 3 plants to a hill.

All kinds mixed, Pkt., 5c; Oz., 35c.

Kale

1 Ounce Will Produce 3,000 Plants.

Culture—Sow from middle of Aprnl to last half of May in prepared beds. Transplant in June, and treat like cabbage. Very tender and delicate.

Dwarf German Purple—Very hardy and of excellent quality. Extremely handsome. **Pkt., 5c; Oz., 10c; ¼ Lb., 25c.**

Dwarf Green Curled Scotch—Low, compact, spreading plants of great beauty. Bright green leaves, curled so as to resemble moss. **Pkt., 5c; Oz., 10c; ¼ Lb., 25c.**

New York Improved Purple Egg Plant

Lettuces

Culture—For main crop sow in spring as soon as ground can be worked in rows, covering ¼ inch deep. Thin out to 4 inches apart, and as young plants grow and begin to crowd, thin out and use. For winter use sow in hot beds from November to February. Keep a moderate heat, and allow as much light and air as possible. **1 Ounce Seed to 100 Square Feet of Drill.**

LOOSE LEAF SORTS

Grand Rapids—Excellent for forcing and shipping. **Pkt., 5c; Oz., 15c; ¼ Lb., 50c.**

Early Prize-Head—Very thin, green and red leaves, crisp and tender. Fine for family use. **Pkt., 5c; Oz., 15c; ¼ Lb., 40c.**

Simpson Black Seeded—Very large, with golden yellow leaves. Superior kind. **Pkt., 5c; Oz., 15c; ¼ Lb., 40c.**

Simpson Early Curled—Favorite early kind, good for forcing or open ground. **Pkt., 5c; Oz., 15c; ¼ Lb., 40c.**

MAY KING HEAD LETTUCE—See Illustration This splendid variety has gained great popularity among gardeners. Forms large, globular heads early in the spring. Has a deliciously mild flavor and does well even under trying conditions. **Pkt., 5c; Oz., 15c; ¼ Lb., 50c.**

May King Head Lettuce

Big Boston

Crisp as Ice—Outside leaves dark brown and green, inside yellow.
Pkt., 5c; Oz., 15c; ¼ Lb., 50c.

California Cream Butter—Excellent summer variety. Good sized heads, with yellow leaves. **Pkt., 5c; Oz., 15c; ¼ Lb., 40c.**

Lettuces—Cont.

HEADING VARIETIES

Big Boston

(See Illustration)

One of the most popular varieties among the head lettuces. Forms beautiful, compact heads of good size. Has a delightful light green color, is tender and of a delicate mild flavor.
Pkt., 5c; Oz., 15c; ¼ Lb., 40c.

Hanson — One of the best later summer kinds. A favorite with market gardeners. Sure to form large, cabbage-like heads. Handsome outer leaves, green with light veins; inner leaves white.
Pkt., 5c; Oz., 15c; ¼ Lb., 40c.

Iceberg — Good size, handsome heads, solid and of fine quality. Green slightly tinged with red.
Pkt., 5c; Oz., 15c; ¼ Lb., 40c.

Philadelphia Butter—Thick, round leaves, solid round heads, standing a long time before seeding. Inner leaves yellow. A favorite with market gardeners.
Pkt., 5c; Oz., 15c; ¼ Lb., 40c.

Wonderful—Mammoth heads. Fine keeper. Solid heart, light green in color, very sweet, tender and crisp. May be cut a long time.
Pkt., 5c; Oz., 20c; ¼ Lb., 60c.

Musk Melons

Culture—Plant when danger from frost is over in hills 5 to 6 feet apart, sowing about 12 seeds, and thinning to 3 or 4 plants. When 4 or 5 rough leaves have developed, pinch end off, which will strengthen the plant, causing it to branch, and will also hasten the maturing of the fruit. Should be planted in rich, well worked soil, well enriched with old manure.

1 Ounce Seed Will Plant 80 Hills.

Burrell Gem

A very beautiful sort of superb quality. Averaging fruits are 6 inches long by about 4 inches wide, with sloping, round ends. Slightly ribbed, with fine netting. Flesh is of a rich salmon color, very sweet, ripening close to the rind. Excellent variety for shipping.
Pkt., 5c; Oz., 15c; ¼ Lb., 40c.

Burpee's Netted Gem—Very early, almost round, dark green in color, thickly netted, with light green flesh of excellent flavor. Weight from 1½ to 2 lbs. A favorite with hotels and restaurants. **Pkt., 5c; Oz., 15c; ¼ Lb., 40c.**

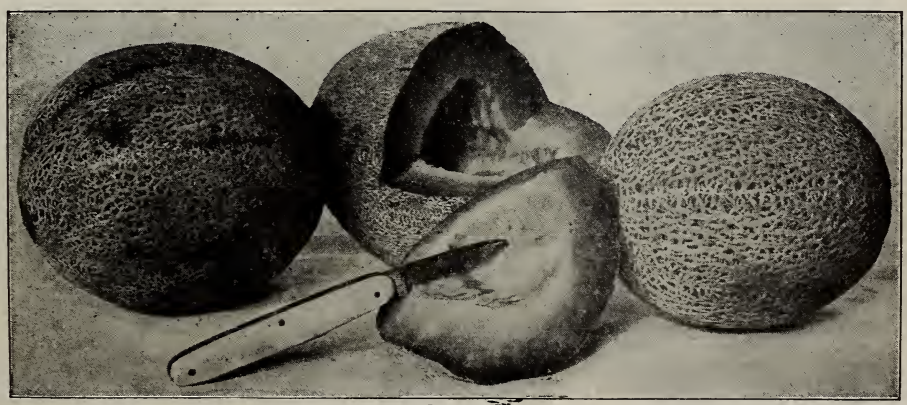
Emerald Gem—One of the earliest. Small, emerald green fruit, with thick salmon colored flesh. Delicious flavor. Fine for hotels and restaurants. **Pkt., 5c; Oz., 15c; ¼ Lb., 40c.**

Hackensack, Extra Early Improved—Two weeks earlier than the old Hackensack, but similar in shape and appearance. Excellent quality. Fine for gardeners.
Pkt., 5c; Oz., 15c; ¼ Lb., 40c.

Osage—Globe or egg-shaped, excellent flavor, dark green, very thick salmon colored flesh. A good yielder, and a favorite with the later markets. Fine for hotels and restaurants.
Pkt., 5c; Oz., 15c; ¼ Lb., 40c.

Rocky Ford (See Illustration) — An improved, oblong form of the Netted Gem. Flesh green, and fine flavored.
Pkt., 5c; Oz., 15c; ¼ Lb., 40c.

Tip Top—Round to oblong. Pale green, handsomely netted, deep salmon flesh, sweet and finely flavored. A good keeper.
Pkt., 5c; Oz., 15c; ¼ Lb., 40c.



Rocky Ford

Water Melon

Culture—Plant in May, in hills 6 to 8 feet apart each way, 10 seeds to a hill, thinning to 3 plants. Soil should be light and moderately rich. Cultivate until vines cover ground, and pinch off end of plant, to induce early maturing of fruit. **1 Ounce of Seed Will Plant 50 Hills.**

Tom Watson A very early sort of uniform shape and superb quality. Average weight 35 to 40 lbs., measuring 28 inches long. Very productive.
Pkt., 5c; Oz., 15c; ¼ Lb., 50c.

Cole's Early—Very hardy, sure cropper, medium size, nearly round. Rind green striped, flesh dark red, very delicate and sweet.
Pkt., 5c; Oz., 10c; ¼ Lb., 25c.

Florida Favorite—Very large melon, of excellent quality. Large, oblong fruit, dark green striped, flesh bright scarlet, very firm and sweet. **Pkt., 5c; Oz., 10c; ¼ Lb., 25c.**

Georgia Rattlesnake—A popular melon, and a favorite market kind. Oblong, large, striped, bright scarlet, very sweet flesh, nearly white seeds. **Pkt., 5c; Oz., 10c; ¼ Lb., 25c.**

Ice Cream—One of the earliest, and one of the best for the North. Nearly round, light green, mottled, excellent flavor. White seeded.
Pkt., 5c; Oz., 10c; ¼ Lb., 25c.

Kleckley Sweet—Excellent for home use or nearby markets. Medium-sized fruit, oblong, tapering toward stem end, dark green, bright red flesh, sweet and tender.
Pkt., 5c; Oz., 10c; ¼ Lb., 30c.

Kolb Gem—One of the best shipping varieties. Most popupar kind in the South. Dark green, mottled, nearly round, fine qualitly.
Pkt., 5c; Oz., 10c; ¼ Lb., 20c.

Peerless—Very early, and one of the best for the North. Rind light green, mottled, flesh firm and sweet. White seeded.
Pkt., 5c; Oz., 10c; ¼ Lb., 25c.

Sweetheart—One of the best. Round, very large, fruit bright green mottled, flesh bright red, firm but very sweet. An excellent shipper. **Pkt., 5c; Oz., 10c; ¼ Lb., 20c.**

Onion

1 Ounce Will Plant 100 Feet Drill; 4 to 6 Pounds Seed 1 Acre; for Sets, 50 or 60 Pounds Per Acre.

Culture — Soil, rather deep, rich loam. Prepare ground the previous fall, by manuring heavily and plowing, leaving the ground in trenches all winter. It should not be tramped on. In the spring level and firm soil. Sow seed thinly in drills about ¼-inch deep, and 1 foot apart. Use drill with roller, or roll with light hand roller after seed is sown. Thin young plants to 3 or 4 inches apart. Cultivate freely by hoeing.

Yellow Globe Danvers

(See Illustration)

Handsome good-sized round onion, thin yellow skin, white flesh, firm and of excellent flavor and quality. Good keeper, fine for sets or large onions.
Pkt., 5c; Oz., 20c; ¼ Lb., 50c.

Yellow Globe Danvers

Onions—Continued

Large Red Wetherfield — The standard red kind. Our seed is much superior to that usually sold. Finest form, purplish-red skin, finer grained than most red sorts. Immense crops of this onion are grown for shipment.
Pkt., 5c; Oz., 20c; ¼ Lb., 50c.

Southport Large Red Globe Selected—Grown from extra fine, hand selected bulbs.
Pkt., 5c; Oz., 20c; ¼ Lb., 50c.

Prizetaker This variety has gained great popularity because of its enormous size and delicate, mild flavor. Keeps well and is an excellent seller.
Pkt., 5c; Oz., 20c; ¼ Lb., 50c.

Southport Large Red Globe Selected — Large, handsome, globe-shaped, purplish crimson. A good keeper, and a good seller, bringing high prices. **Pkt., 5c; 0z., 20c; ¼ Lb., 50c.**

Southport White Globe—One of the handsomest and best. Large, globe-shaped, clear white skin, mild flavor. A good keeper and seller. Always commands highest market price.
Pkt., 10c; Oz., 30c; ¼ Lb., 90c.

White Portugal or Silverskin — Medium-sized, flat, white, mild and agreeable in flavor. Hard, fine-grained, and good keeper. A favorite for bunching and pickling.
Pkt., 5c; Oz., 20c; ¼ Lb., 60c.

Parsley

1 Ounce to 150 Ft. Drill.

Culture—Should be sown early in spring. Seed germinates very slowly, and is helped by soaking. Rich mellow soil. For general crop sow thickly in rows a foot apart and ½ inch deep. For winter use place in pots or boxes in the house.

Champion Moss Curled—Densely crimped and curled. Standard variety. Vigorous and desirable. **Pkt., 5c; Oz., 15c.**

Fine Double Curled—Very fine, beautiful dwarf variety. **Pkt., 5c; Oz., 15c.**

Parsnip

1 Ounce Seed to 200 Feet Drill; 5 to 6 Pounds in Drills Per Acre.

Culture—Sow in spring as early as weather will permit in rich ground, in drills 15 inches apart, covering ½ inch. Thin to 6 inches apart, and cultivate well. Improved by being left in ground during winter.

Guernsey—Roots of greater diameter than Hollow Crown, but not quite so long. (See illustration.) An excellent flavor.
Pkt., 5c; Oz., 10c; ¼ Lb., 25c.

Hollow Crown—Pkt., 5c; Oz., 10c; ¼ Lb., 25c.

The Finest of American Peas

1 Qt. for 75 Ft. Drill; 2 to 3 Bu. in Drills per Acre.

Culture—For early supply sow early in the spring, and make sowings every two weeks for succession. For general crop, deep rich loam or clay is best. For early varieties use leaf mold; if soil is very poor, apply manure. For general crop use a good dressing, and for dwarf kinds you cannot have the soil too rich. For market crops peas are not staked, but grow in rows 3 to 4 inches deep, according to time, soil and variety. Wrinkled varieties are not so hardy as the smooth sorts, and are liable to rot, so if planted early, they should have warm dry soil, and not be planted too deeply. They are, however, the sweetest and best. Rows for planting should be 2½ to 3½ feet apart.

Extra Early Peas

***All marked thus are Wrinkled**

Little Marvel Pea **(See Illustration)** —*A wrinkled variety of choicest quality. The vines are of a dwarf growth, averaging fifteen inches in height. Handsome pods, two and one-half inches in length are borne in pairs. They are well filled with from six to seven sweet, delicious peas of dark green color. More prolific than Gradus, Thomas Laxton, or other extra early wrinkled sorts of high quality. **Pkt., 15c; Pt., 35c; Qt., 60c; 4 Qts., $1.65.**

***American Wonder** — One of the earliest and most productive wrinkled sorts. Height, ¾ feet. **Pkt., 10c; Pt., 30c; Qt., 50c; ½ Pk., $1.30.**

***Extra Early Premium Gem**—An improvement on Little Gem. Height, 1½ feet. **Pkt., 10c; Pt., 30c; Qt., 50c; ½ Pk., $1.50.**

***Nott's Excelsior** — Very early and productive. Finest quality. Height 1¼ feet. **Pkt., 10c; Pt., 35c; Qt., 60c; ½ Pk., $1.65.**

Alaska—Earliest blue pea. Popular with canners and market gardeners; very fine variety. Height, 2½ feet. **Pkt., 10c; Pt., 30c; Qt., 50c; ½ Pk., $1.10.**

First and Best—A standard variety. Very early and productive. Height 2½ feet. **Pkt., 10c; Pt., 30c; Qt., 50c; ½ Pk., $1.10.**

***Gradus or Prosperity**—Finest extra early Pea. Very large pods well filled with large peas of finest quality. Height, 3 feet. **Pkt., 10c; Pt., 35c; Qt., 60c; ½ Pk., $1.75.**

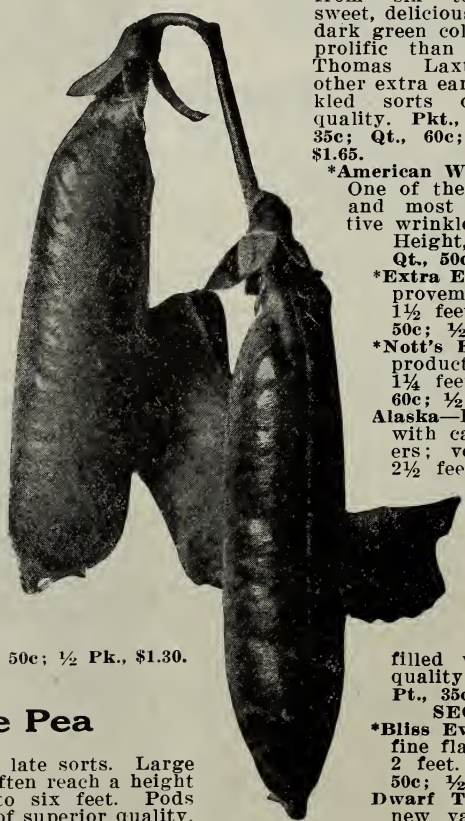
SECOND EARLY PEAS

***Bliss Everbearing**—Fine long pods, fine flavor, good yielder. Height, 2 feet. **Pkt., 10c; Pt., 35c; Qt., 50c; ½ Pk., $1.50.**

Dwarf Telephone—One of the best new varieties. Large, well-filled pods. Fine flavor. Height 1½ feet. **Pkt., 10c; Pt., 25c; Qt., 40c; ½ Pk., $1.25.**

Alderman Pea

A mid-season variety of exceptional quality. Robust vines grow five to six feet tall, and should be supported with brush or trellises for best results. Pods are borne singly and usually contain seven and eight large, dark green peas of superb quality. Whether a large or small grower, you make no mistake in selecting this splendid sort for your mid-season variety. **Pkt., 10c; Pt., 30c; Qt., 50c; ½ Pk., $1.30.**



Little Marvel

Telephone Pea

A great favorite among the late sorts. Large vines with coarse leaves often reach a height of from 4 and onehalf to six feet. Pods contain six to seven peas of superior quality. Plants continue to bear until quite late in the season. **Pkt., 10c; 1 Pt., 35c; Qt., 60c; ½ Pk., $1.75.**

Pepper

1 Ounce Will Produce 2,000 Plants.

Culture—Sow in hot beds early in April. Transplant to open ground when weather permits. May be sown in open ground when weather will allow. Soil should be warm and mellow. Rows 18 inches apart.

Chinese Giant—Mammoth size, fine shape, rich, glossy red flesh, mild and fine flavored. Strong, bushy plants, very productive.
Pkt., 10c;; ½ Oz., 30c; Oz., 50c; ¼ Lb., $1.50.

Ruby King—Best for market and family use. Mild red, sweet pepper, very large.
Pkt., 10c; ½ Oz., 20c; Oz., 30c; ¼ Lb., 85c.

Sweet Mountain or Mammoth — Standard. Glossy red, thick and fleshy, large and mild. Fine for market gardeners.
Pkt., 5c; ½ Oz., 10c; Oz., 20c; ¼ Lb., 50c.

Large Bell or Bull Nose—Early, large, mild and thick-skinned. Favorite pickling variety.
Pkt., 5c; ½ Oz., 10c; Oz., 20c; ¼ Lb., 50c.

Long Red Cayenne—Bright red, very productive, very strong and pungent.
Pkt., 5c; ½ Oz., 15c; Oz., 25c; ¼ Lb., 75c.

Red Chili—One of the most pungent. Very small bright red, cone shaped.
Pkt., 5c; ½ Oz., 15c; Oz., 25c; ¼ Lb., 75c.

Neapolitan Pepper

Earliest of all large, mild red peppers. Strong vigorous plants, grow two feet tall and bear continuously until frost. Peppers are very meaty with a mild flavor, and have a bright red flesh and skin. Retain their quality a long time after being picked.
Pkt., 5c; ½ Oz., 10c; Oz., 20c; ¼ Lb., 50c.

Neapolitan Pepper

Pumpkin

1 Pound Will Plant 200 to 300 Hills.

Culture—May be sown in corn, two or three seeds to every third or fourth hill. Or may be sown in hills 8 feet apart each way. 4 plants to the hill.

Connecticut Field—Largely used in the East as a field variety. Usually planted with corn.
Pkt., 5c; Oz., 10c; ¼ Lb., 15c; 1 Lb., 40c.

Pumpkin Field Scene

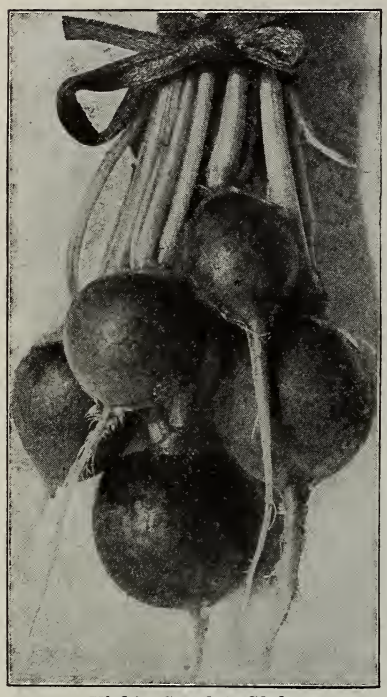
Japanese Pie — Very fine, sweet, productive, early, delicious in flavor and fine in texture. Medium size, good keeper.
Pkt., 5c; Oz., 10c; ¼ Lb., 15c; 1 Lb., 40c.

King of the Mammoths—Enormous size, sometimes weighing 250 lbs. Round, slightly ribbed, bright yellow. Grown mostly for stock, but makes excellent pies.
Pkt., 5c; Oz., 10c; ¼ Lb., 20c; 1 Lb., 50c.

Large Tours or Mammoth — Immense size, sometimes weighing 200 lbs. Oblong, used principally for stock. **Pkt., 5c; Oz., 10c; ¼ Lb., 15c; 1 Lb., 45c.**

Large Cheese or Kentucky Field—Large, round, flat variety, very productive and of good quality. Orange flesh. One of the best.
Pkt., 5c; Oz., 10c; ¼ Lb., 15c; 1 Lb., 40c.

Sweet or Sugar — Small, round, very productive. Orange yellow, sweet, fine-grained, and excellent for pies. **Pkt., 5c; Oz., 10c; ¼ Lb., 15c; 1 Lb., 40c.**



Vick's Scarlet Globe

Radish

1 Ounce to 100 Feet Drill.

Culture—For very early supply, sow in hot-beds in February, and move to open ground when ground can be worked. Sow at intervals of ten or twelve days for succession. Sow winter varieties in August, and store in cellar before frost.

Crimson Giant Globe

Crimson Giant Globe—Very large, tender and crisp, never pithy. Suitable either for forcing or open ground.
Pkt., 5c; Oz., 10c; ¼ Lb., 30c.

Vicks Scarlet Globe

(See Illustration)

One of the finest bright red, round radishes we know. Can not be surpassed in crisp and tender quality. A leading market sort in all sections of the country.
Pkt., 5c; Oz., 10c; ¼ Lb., 25c.

Turnip, Early Scarlet—Standard variety, early and quick growing. **Pkt., 5c; Oz., 10c; ¼ Lb., 20c.**

Turnip, Early Scarlet, White Tipped—Very early, round, bright scarlet, shading to white at bottom.
Pkt., 5c; Oz., 10c; ¼ Lb., 25c.

Turnip, Philadelphia White Box—One of the best for forcing; also good for outdoor culture. Round white radish, good-sized, very handsome, with short top. Crisp and tender. **Pkt., 5c; Oz., 10c; ¼ Lb., 25c.**

Long Cincinnati Market—Finest long radish for forcing. An improved strain of Long Scarlet Short Top.
Pkt., 5c; Oz., 10c; ¼ Lb., 25c.

Long Icicle—Best white. Very early, transparent white, matures quickly. **Pkt., 5c; Oz., 10c; ¼ Lb., 25c.**

Long Scarlet Short Top—Standard scarlet variety, brittle and crisp. **Pkt., 5c; Oz., 10c; ¼ Lb., 25c.**

Long White Lady Finger—Beautiful shape, snow-white, juicy, crisp and tender. Best long white radish.
Pkt., 5c; Oz., 10c; ¼ Lb., 25c.

Chartier Radish

A splendid variety of mild crisp flavor. Often attains very large size. Grows rapidly and is of a clear rose color shading into pure white at the tip. **Pkt., 5c; Oz., 10c; ¼ Lb., 25c.**

Winter Varieties

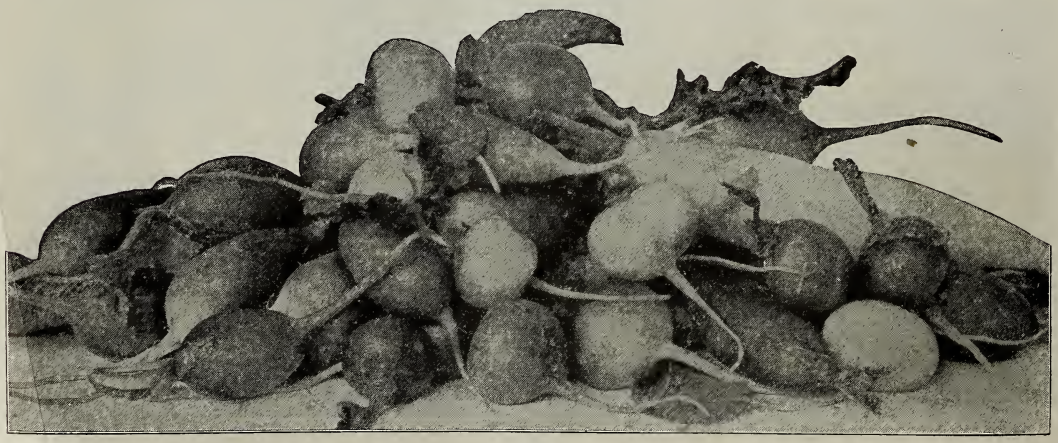
Long Black Spanish—One of the best. Skin black, flesh white, firm and slightly pungent. **Pkt., 5c; Oz., 10c; ¼ Lb., 20c.**

China Rose Winter—One of the best, and a favorite with market men. Bright rose-colored skin, with white flesh.
Pkt., 5c; Oz., 10c; ¼ Lb., 20c.

White Chinese, or New Celestial—Can be used from the time it is 2½ or 3 inches long until it is 6 inches long. Can be sown from July 1st to August 15th. Very handsome, with solid, pure white flesh of good flavor.
Pkt., 5c; Oz., 15c; ¼ Lb., 40c.

Wing's Unique Radish Mixture

Just the thing for the small gardener. Contains large, medium and small varieties of early mid-season and late maturity. Some are of red, others of white and pink color; all crisp and juicy with a delicious flavor. Sorts to suit all tastes and fancies.
Pkt., 5c; Oz., 10c; ¼ Lb., 25c.



Salsify

1 Ounce to 50 Foot Drill.

Culture—Sow in spring, in drills 12 inches apart and 1 inch deep, thinning to 4 or 5 inches. May be left in ground all winter.

Mammoth Sandwich Island — The best. A splendid variety, very large, uniform, delicious flavor. **Pkt., 5c; Oz., 15c; ¼ Lb., 35c.**

Spinach

1 Ounce to 100 Foot Drill.
10 to 12 Lbs. to Drills Per Acre.
Culture — Main crop is sown in September. For summer use sow at intervals of two to three weeks from April to August.

Bloomsdale, Savoy Leaved (See Illustration)—Very productive and hardy. Crinkled leaves, fine quality. **1 Oz., 5c; ¼ Lb., 15c; Lb., 40c.**

Long-Standing Thick-Leaved—Does not run to seed as soon as other kinds. Dark green imported seed. **Oz., 5c; ¼ Lb., 15c; Lb., 40c.**

Victoria—A little later than the Long-Standing Thick-Leaved. Dark green. **1 Oz., 5c; ¼ Lb., 15c; Lb., 40c.**

Squash

Culture—Sow in spring after ground is warm. Plant in hills 5 to 6 feet apart for bush varieties, and 6 to 8 feet apart for running varieties. Sow 7 or 8 seeds to a hill, and thin to 3 plants.

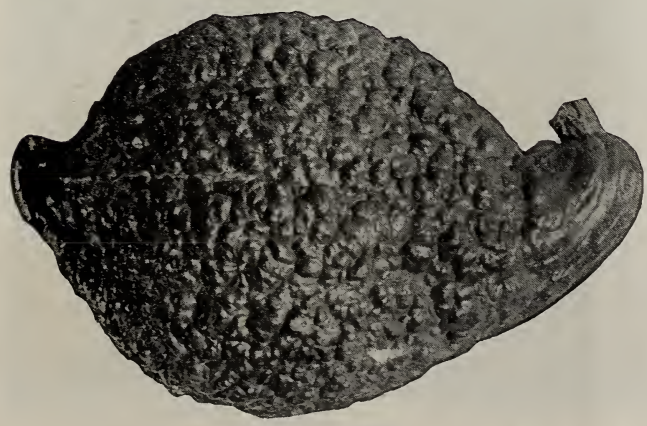
Boston Marrow—Oval form, thin skin, bright orange, with yellow flesh. Good size, excellent flavor. Keeps well. Fine for table or canning. **Pkt 5c; Oz., 10c; ¼ Lb., 20c; Lb., 65c.**

Early White Bush Scalloped—Good, standard summer variety. **Pkt., 5c; Oz., 10c; ¼ Lb., 25c; Lb., 75c.**

Giant Summer Crookneck—Very large, thickly warted, handsome squash. A good seller, bringing high prices. **Pkt., 5c; Oz., 10c; ¼ Lb., 25c; Lb., 75c.**

Improved Hubbard (See Illustration)—The standard winter squash. Bluish green, flesh sweet and finely flavored. Has a hard shell, and will keep all winter. **Pkt., 5c; Oz., 10c; ¼ Lb., 30c; Lb., $1.00.**

Warted Hubbard—Large, dark green, densely warted. Splendid quality, good keeper. **Pkt., 5c; Oz., 15c; ¼ Lb., 40c; Lb., $1.25.**



Chalk's Jewel

Turnip

1 Oz. Seed to 150 Ft. Drill; 2 Lbs. Per Acre.

Culture—For early supply sow as soon as ground can be worked, in drills 15 inches apart, thinning to 8 inches. Sow at intervals of two weeks until the last of July, when sowing may be made for main crop.

Early Snowball (See Illustration) — Medium-sized, pure white, round, early, and of fine quality.
Pkt., 5c; Oz., 10c; ¼ Lb., 20c; Lb., 50c.

Extra Early Purple-Top Milan—The earliest flat turnip. Medium size, white with purple top. Sweet and fine flavored, early.
Pkt., 5c; Oz., 10c; ¼ Lb., 20c; Lb., 65c.

Red Top White Globe—Like Purple Top Strap Leaved, excepting that it is almost round. Very large and productive.
Pkt., 5c; Oz., 10c; ¼ Lb., 20c; Lb., 50c.

Early White Flat Dutch—Very early flat, white, very sweet and fine grained. Fine in appearance. **Pkt., 5c; Oz., 10c; ¼ Lb., 20c; Lb., 45c.**

Long White Cow Horn—Long. Grows quickly, partly above ground. A good variety. Flesh firm, fine-grained and sweet. Very productive. **Pkt., 5c; Oz., 10c; ¼ Lb., 20c; Lb., 45c.**

Red, or Purple Strap Leaved—Best known popular variety. Large, flat, white, purple above ground. Grows rapidly. Good for winter use, or late planting. **Pkt., 5c; Oz., 10c; ¼ Lb., 20c; Lb., 65c.**

Ruta Baga

1 Oz. to 150 Ft. Drill; 2 Lbs. Per A.

Culture—Sow from June 20th to middle of July, in drills 2 feet apart. Thin to 10 inches between plants.

Improved American Purple Top—One of the best. Large bulbs, yellow flesh with purple crown, sweet and solid. Good for stock or table use. **Pkt., 5c; Oz., 10c; ¼ Lb., 20c; Lb., 50c.**

White Sweet German—The very best for table use. Firm, white and sweet. Mild-flavored and fine-grained. Excellent keeper. Very large. Fine for stock. **Pkt., 5c; Oz., 10c; ¼ Lb., 20c; Lb., 50c.**

Tomato

1 Ounce Will Produce 1,500 Plants

Culture—Sow seed in the hot-bed in February, and at intervals until April. When plants are 2 inches high, transplant about 4 inches apart, and after 3 or 4 weeks transplant from hot-house into cold frame. Plant in open ground about June 1st. Well enriched soil. Set 5 feet apart each way.

Beauty

A very handsome sort of extra fine quality. Purple fruits are produced in clusters of four to six. Ripens very early and remains in good condition for some time after picked.
Pkt., 10c; Oz., 25c; ¼ Lb., 75c.

Chalk's Jewel

(See Illustration)

An early variety of thrifty growth yielding heavy fruits. Flesh is thick, solid and of superb quality. Has few seeds.
Pkt., 5c; Oz., 25c; ¼ Lb., 75c.

Dwarf Champion—Early, with smooth, purplish-red fruit, plant compact and upright.
Pkt., 10c; Oz., 30c; ¼ Lb., 85c.

Dwarf Stone—Early. Nearly twice as large as Dwarf Champion, better yielder.
Pkt., 10c; Oz., 30c; ¼ Lb., 85c.

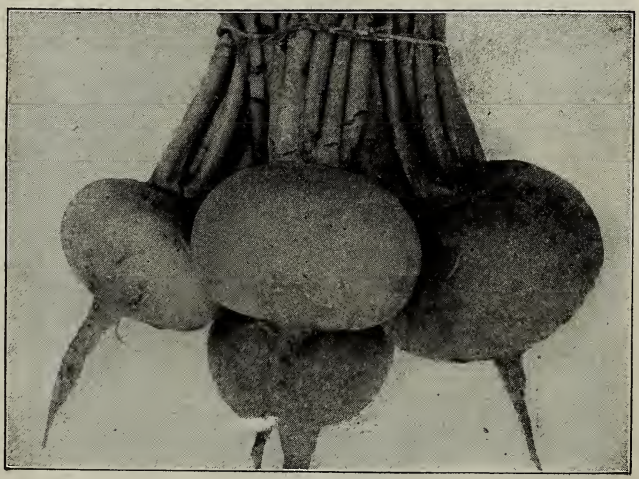
Sparks Earliana—Earliest smooth, bright red tomato. Large and very prolific.
Pkt., 5c; Oz., 25c; ¼ Lb., 75c.

Livingston's Globe—Large, firm, smooth, early Tomato, rose tinged purple. Very productive and good. **Pkt., 10c; Oz., 40c; ¼ Lb., $1.25.**

Matchless—Large, very solid, smooth and productive. Color cardinal red.
Pkt., 5c; Oz., 25c; ¼ Lb., 75c.

Ponderosa—Large, sometimes weighing 4 lbs., solid, finely flavored, bright red in color.
Pkt., 5c; Oz., 35c; ¼ Lb., $1.10.

Stone—One of the best. Very large, being the heaviest and most solid of the large varieties. Round, apple-shaped fruit, very heavy, of fine quality. **Pkt., 10c; Oz., 25c; ¼ Lb., 75c.**



Early Snowball

Wing's Quality Flower Seeds

Following the urgent demand of many of our customers, we have enlarged our flower seed department, and offer the most easily grown favorites. In securing our flower seeds, we have taken care to go to the most conscientious growers in order to secure the choicest strains and seeds of highest vitality. Be sure to plant liberally of Wing's Flower Seeds. They are sure to prove a source of satisfaction.

Centaurea Cyanus

Well known among home gardeners as corn flower or Bachelor's Button. It is a most satisfactory annual for cutting, blooming a long time and producing flowers in liberal quantities. They thrive well in poorest soil, self seed freely and will come up year after year, since the seeds are very hardy. Centaureas look best planted in borders or beds.

All kinds mixed. Pkt., 5c.

Aster

The most popular of all annuals for cutting. Asters come in many classes and we offer them in a mixture, so as to give you a variety of flowers at different seasons of the year. They come in many colors and bloom faithfully until rather late in the fall. For best results, Asters should be transplanted to stand about 6 inches apart each way. All kinds mixed. **Pkt., 10c.**

Shirley Poppies

Shirley is the most satisfactory of all the poppies for cutting. The flowers are wonderfully beautiful, bright, dainty and gauzy, and of the most exquisite colors. Poppy seed is very small, and great care should be exercised to sow it very shallow. If the young plants once take firm hold, they will remain and bloom freely under the most adverse weather conditions. Shirley is sown in May for summer blooming and in August for spring blooming. All colors mixed. **Pkt., 5c; ½ Oz., 15c.**

Verbena

The best summer bedding plant grown from seed. The colors are beautiful, and the flowers are produced until late in the Autumn. It is useful in beds, borders and window boxes, and a single well-grown plant will cover a space 3 to 4 feet in diameter. Seed should be soaked before planting. It may be started under glass or in sunny windows for early spring bloom, or outdoors in March and April. They also self sow; many new and unusual colors are found in these self-sown plants. **Pkt., 10c.**

Wings' Quality Flower Seeds will grow and bloom.

Sweet Alyssum

(Alyssum Maritimum)

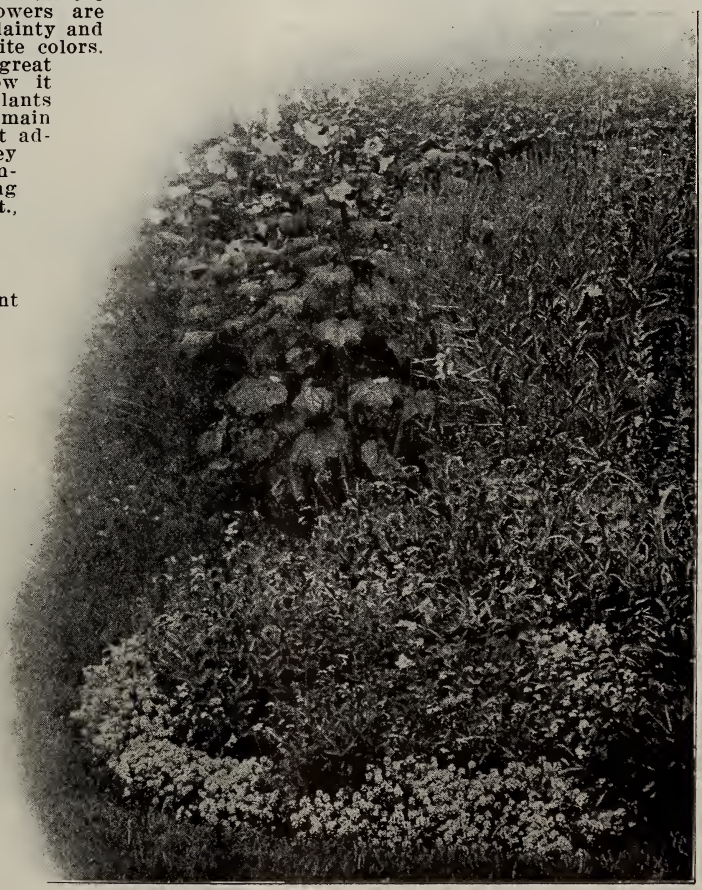
An ideal little bedding plant well known for its long blooming season and brilliant white color. It is well adapted for bordering around beds, along walks or wherever a dwarf growing flower is desirable. It blooms almost uninterruptedly from early summer **until frost** in the late fall. If, toward the end of the first blooming period the flower spikes are cut off, it will make a new growth and bear another crop of bloom. Sweet Alyssum freely self sows. Very easily grown from seed.

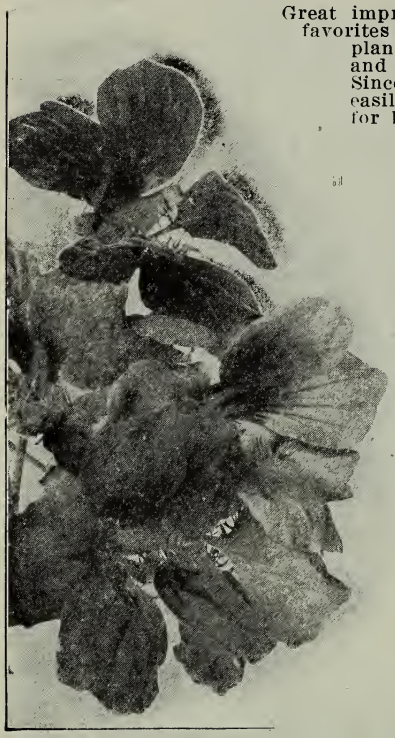
Pkt., 5c; Oz., 30c.

Zinnias

Although of rather coarse appearance, these splendid flowers are valued highly for their dependability. Zinnias grow nearly anywhere and the sturdy plants with their substantial foliage are all real symmetrical growth. They vary in height from 1 to 3 feet and bear substantial flowers in many colors.

All colors mixed. Pkt., 5c.





Pansies

Great improvements in size and color have made these old-fashioned favorites still more popular. Pansies are really biennials, and if the plants are covered with coarse manure in the fall, they will survive and furnish you a lot of large, fine flowers the following spring. Since Pansies will bloom from seed the first year and are so easily grown, we can recommend them as one of the best plants for bedding for the home garden. **All colors. Pkt., 10c.**

Petunia

Valuable where masses of color are desired. Our mixture is composed of superb strains, and will furnish a profusion of variety of gloriously colored flowers. **Fine mixed, Pkt., 10c; W. B. mixed, Pkt. of 300 seeds, 25c.**

Gaillardias

An easily grown annual that should find room in every garden. The plants themselves do not grow over 6 inches tall, but the flowers are carried way above the foliage on long slender stems, are ideal for bouquets. Gaillardias bloom from early summer until late in the fall. They are very hardy and the seeds may be planted almost as soon as you begin to make garden. **All colors. Pkt., 5c.**

Hollyhocks

Greatly valued for their tall, stately appearance, which makes them ideally adapted for back grounds or to hide unsightly fences. Both foliage and flowers are very ornamental and they bloom clear up to frost. Hollyhocks freely self-seed, and will come up year after year on the same spot, where the winters do not get any colder than in central Ohio. **All colors. Pkt., 10c.**

Phlox Drummondii
(Grandiflora)

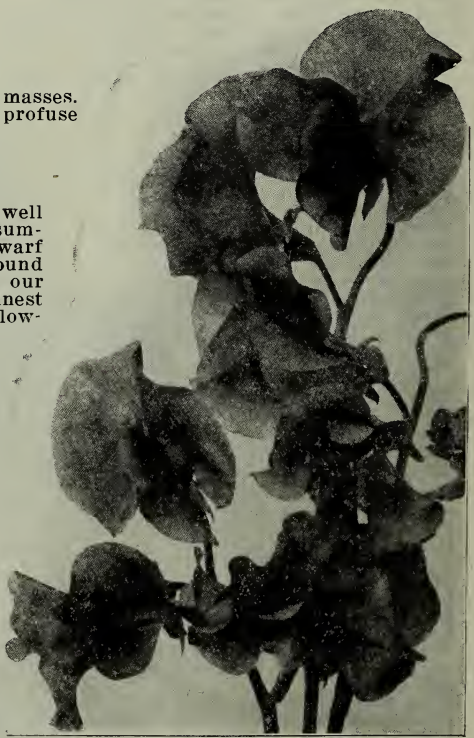
Brilliant and beautiful little plants, most effective in masses. Easily grown, neat and compact in habit, quick and profuse bloomers. **Pkt., 10c; Oz., 60c.**

Nasturtiums

These are the easiest grown of all flowers. They thrive well in even poorest soil and bloom constantly from early summer until killed by heavy frost in the fall. The dwarf sorts are suitable for borders, beds, or for edging around taller growing flowers. The taller sorts are among our most popular climbers. Our mixtures contain the finest named sorts and will bear a profusion of extra large flowers throughout their season.

Dwarf Mixed—A mixture composed of the most beautiful colors. **Pkt., 5c; Oz., 10c.**

Tall Mixed—The finest colors mixed of the tall running nasturtiums. **Pkt., 5c; Oz., 10c.**



Japanese Pinks
(Dianthus Heddiwigii)

Hardy biennials that bloom finely the first season from seed, live through winter, and bloom early the second year. The flowers are larger the first year. They are ideal as border plants and also fine for cutting, although the stems are not longer than 8 inches. Some varieties have a faint sweet fragrance, and all come in the most beautiful colors. For best results plants should not stand closer than 4 inches apart in the row. They stand transplanting well. Every garden should have a bed of these lovely flowers. **All sorts and colors mixed. Pkt., 10c; Oz., 50c.**

Aquilegia

(Columbine)

(Hardy Perennial)

One of the best border plants. It forms large clumps, foliage is always clean and attractive, the delicate flowers of clear blue, white, rose, yellow and purple, are produced early and long. It may be planted in the open border, but will grow best in partial shade. Sow the seeds in spring in the open ground; they are sometimes slow to germinate. **Single Mixed, Pkt., 5c; Double Mixed, Pkt., 5c.**

Campanula

(Canterbury Bell)

(Hardy Biennial)

One of the loveliest old garden flowers. Sow the seeds in spring or in July, and thin or transplant. They may be wintered in cold frames or in the open ground, although in the latter case they tend to heave out, and should be planted in well-drained soil. **Single Mixed, Pkt., 5c; Double Mixed, Pkt., 5c.**

Delphinium

(Larkspur)

(Annual and Perennial)

The annual forms are well known, dainty and pretty, with quite a range of colors. They like a rich soil, the richer the better. Sow in spring or fall in the open ground. They are hardy annuals, and very freely self-sow. They are beloved by the humming birds, who are always found hovering around their blossoms.
Mixed Annuals, Pkt., 5c.

Perennial Larkspurs are very beautiful and satisfactory border plants. The foliage is neat and attractive, and the immense flower spikes of dazzling blue are very striking. They are hardy as rocks, and soon form immense clumps. In order to have them at their best, the soil must be very rich. Sow in the spring for flowers the second year. As soon as they are done blooming, cut to the ground, when they will produce a second crop of smaller flowers. We offer an exceptionally fine strain, Kelway's Hybrids. **Pkt., 10c.**

Foxglove

(Digitalis)

(Hardy Perennial)

Stately and beautiful. The long spikes of thimble-shaped flowers are often 3 to 5 feet long, and are of many soft shades of purple, rose, yellow, etc., tigered and spotted. Although a perennial, it is best treated as a biennial, as the flowers are not so good the second blooming. Sow the seed in the spring for flowers the second year, and transplant. May be wintered in cold frames or the open ground if lightly covered with coarse litter. Be careful not to cover the crown too heavily. We offer the Montrosa strain, which has a beautiful large bell-shaped flower at the top of the spike. **Mixed, Pkt., 10c.**

Sun Flowers

Mammoth Russian — The standard variety. Very large. Fine for poultry.
Pkt., 5c; ¼ Lb., 10c; Lb., 25c.

Sweet William

(Dianthus Barbatus)

(Hardy Biennial)

These beautiful flowers are very effective in front of Foxgloves, as they harmonize perfectly with them and bloom at the same time. They require a rich soil. The seed may be sown in the spring to flower the second year. They self-sow very freely. Come in rich and delicate shades of chamois, pink, rose, crimson, etc.

Single Mixed, Pkt., 5c; Double Mixed, Pkt., 10c.

Cosmos

These may be called the ideal fall flower. They grow from 4 to 6 feet tall according to variety and soil. Just before frost, the very ornamental plants bear an abundance of beautiful flowers on long stems. Plants are clothed in artistic fern-like foliage. The flowers last a long time in water after cutting.
All sorts mixed, Pkt., 5c.

Mignonette

(Reseda Odorata)

An old and well-known plant, grown for the delicate fragrance of its modest little flowers.
Pkt., 5c; Oz., 20c.

Marigolds

Plants grow from 2 to 2½ feet tall, and the flowers come in various yellow shades. For bedding or planting in borders, Marigolds are highly esteemed. They are easy to grow, and bloom faithfully through a long season.
Mixed Colors, Pkt., 5c.

Sweet Peas

These are and always will be the most popular of all fragrant flowers for cutting. Sweet Peas should be planted as early in the spring as the weather permits, since an early start will cause them to root deeply. Keep Sweet Peas pickled off regularly. The more you cut them the more will they bloom.
Spencer Sweet Peas—Pkt., 5c; Oz., 10c.

Candytuft

(Iberis) Giant Hyacinth Flowered White
One of the best for edging, massing and rockeries. For succession of bloom, sow in April, May and late July. **Pkt., 10c; Oz., 40c.**

Balsam

Tall, stately bedding plants, well known among many of our friends as Ladies' Slippers. Balsams literally grow as easily as grass. They reach a height of 2 to 2½ feet and bloom freely through summer and fall. They are rather tender and seeds should not be sown until the second or third week in May.
All colors mixed. Pkt., 5c.

Snapdragon

(Anthirrhinum)

One of our best perennials, flowering the first year from seed. The seed may be sown under glass in February and March, or in the open ground when it is warm enough. For winter blooming in the house cut back well until September. Large flowering mixed, **Pkt., 10c.**

Portulacca

Charming little annual, carpeting the ground with a mass of succulent foliage covered with brilliant little blossoms. They require but little care, and like best hot situations, where they will flourish during the driest weather. Single mixed, **Pkt., 5c;** double mixed, very beautiful, **Pkt., 10c.**

Scabiosa

(Morning Bride)

Fine for cut flowers. They begin to bloom early in July and continue until cut down by the frost. The flowers are soft shades of pink, maroon, lilac, also white, and the stems are very long Mixed, **Pkt., 5c.**

Ageratum

One of the best blue annuals. Begins to bloom early and continues until cut down by the frost. When once established in a garden it very freely self sows and will furnish enough volunteers. Ageratum Mexicanum, tall, **Pkt., 5c;** Princess Victoria Louise, prettiest dwarf, forming dense little bushy plants, **Pkt., 10c.**

Escholtzia

(California Poppy)

The state flower of California. An annual with silvery fine-cut foliage and bright rich flowers in pure tints of yellow, orange, etc. Mixed, **Pkt., 5c.**

Clove or Grass Pinks

(Hardy Perennial)

The sweet May Pinks of old gardens. There is nothing more beautiful. Give them good soil and full sun. Single mixed, **Pkt., 5c;** W. B. mixed, comprising many colors not found in the old varieties, **Pkt., 15c.**

Calliopsis

One of the best yellow annuals. Also found in yellow and brown. Sow in the open ground in spring, and give plenty of room in transplanting. **Pkt., 5c.**

Cypress Vine

Well known climber with finely cut foliage and star-shaped flowers. White, **Pkt., 5c;** Crimson, **Pkt., 5c;** Mixed, **Pkt., 5c.**

Maurandia

(Tender Perennial)

An old favorite and one of the best. Graceful, slender climber, with glossy, ivy-like leaves, and trumpet shaped flowers, blue, white or rose, with white throat. Sow in window boxes or hotbed, and transplant to open ground. It grows six to ten feet high, and will bloom the first year from seed. **Pkt., 10c.**

Salvia Splendens

Standard bedding plant. Ours is the best, has the largest flowers and more of them than any other kind. Sow seed in window boxes or frames in March or April, or outdoors about the 1st of June. They very quickly grow and bloom. **Pkt., 10c.**

Forget-Me-Not

(Myosotis Alpestris Victoria)
(Hardy Perennial)

Dwarf habit, flowers sky-blue, fine for cutting. Sow in the spring in warm sunny spot. They thrive best in cool, moist situation, and freely self-sow. **Pkt., 15c.**

Japanese Morning Glories

Myriads of lovely flowers varying from white to almost black, running through all shades of red and blue, wonderfully marked. Vigorous vines, leaves often mottled and streaked. **Pkt., 10c.**

Godetia

Free blooming annual, delicate and lovely. Satiny flowers in white, rose, carmine, etc. They do best in partial shade, and may be sown in the open ground in the spring. **Pkt., 5c.**

Clarkia

One of the daintiest of annuals. Many bright colors, very free blooming. Does best in partial shade. Mixed, **Pkt., 5c.**

Oriental Poppy

(Hardy Perennial)

Magnificent plant with enormous scarlet flowers. Absolutely hardy. **Pkt., 10c.**

Salpiglossis

Showy, half hardy annuals, easily grown. Flowers are tube shaped, of the richest colors, crimson, lilac, pink, violet and purple, veined with gold. Try a packet this year. **Pkt., 10c.**

Daisy

(Bellis Perennis
(Half-Hardy Perennial)

Charming little plants. Sow seed in window boxes, hotbeds or greenhouses in February or March. They may also be sown outdoors in August or September and transplanted to permanent quarters in spring. Will live through the winter if given covering of straw or litter. **Pkt., 10c.**

Arctotis Grandis

Deserves to be more extensively grown. This handsome annual is fine for cutting. It has silvery foliage, white daisy-like flowers with blue centers, borne on long stems. Blooms until cut down by frost. **Pkt., 5c.**

Geranium

Readily grown from seed. It is most interesting to watch the development of the tiny plants. Start in boxes and transplant to open ground. Our mixture is composed of the most beautiful colors. **Pkt., 5c.**

Dahlia

Easily grown from seed, and will bloom the first year. Some of the flowers will be imperfect, but from a packet of seed will be produced many blooms that are perfect and beautiful. Our mixture is composed of all the standard strains, show, decorative, cactus, etc., also single and striped. **Pkt. of 75 seeds for 25c.**

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And Table of Quantities Required Per Acre; Also Weight Per Bushel.

Winkler Printer
Springfield, Ohio.